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PETROLEUM INVESTIGATION

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Pt. 4

HEARING

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE HOUSE OF REPRESENTATIVES

SEVENTY-SIXTH CONGRESS
THIRD SESSION

ON

H. Res. 290 and H. R. 7372

TO PROMOTE THE CONSERVATION OF PETROLEUM; TO PROVIDE FOR COOPERATION WITH THE STATES IN PREVENTING THE WASTE OF PETROLEUM; TO CREATE AN OFFICE OF PETROLEUM CONSERVATION; TO AMEND THE ACT OF FEBRUARY 22, 1935, AS AMENDED, AND FOR OTHER PURPOSES

FEBRUARY 19, 20, 21, 22, 26, AND 27, 1940, AT WASHINGTON, D. C.

PART 4

(Note: Part 1—not so indicated—contains the November hearings at Washington, D. C.)
(Index will be printed as Part 5)

Printed for the use of the Committee
on Interstate and Foreign Commerce

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1940

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CONTENTS

Statements of—

	Page
Allen, Robert E., California Oil and Gas Association	1703
Armstrong, William J., supplemental statement	2103
Beckworth, Hon. Lindley, M. C	2133
Benton, John E., National Association of Railroad and Utilities Commission	2115
Blalock, Jack	1565, 1585
Brookings, W. D., United States Chamber of Commerce	2047
Brown, Russell B., Industry Committee	1866
Budke, John F	2024
Buttram, Frank, Independent Petroleum Association of America	1856
Carlson, Hon. Frank, M. C	1855
Cheney, M. G., Anzac Oil Corporation	1775
Dempsey, Hon. John J., M. C	2131
Disney, Hon. Wesley E., M. C	2007
Dorn, Forest D., Pennsylvania Grade Crude Association	1753
Dow, Fayette B., Western Petroleum Refiners Association	1952
Dow, Hiram M., Interstate Oil Compact Commission	1526
Downie, Ernest R., State Farm Insurance Co., Illinois	2127
Fell, H. B., Independent Petroleum Association of America	1827
Ferguson, Hon. Phil, M. C	1807
Greever, Hon. Paul R., Rocky Mountain Oil & Gas Association	1667
Hadlick, Paul E., National Oil Marketers' Association	2011
Hamon, Jake L., National Stripper Well Association	1799
Hardwicke, Robert E	1465
Hatch, Hon. Carl A., United States Senate	1865
Heath, Francis E., Sun Oil Co	1757
Henry, Winston P	1785
Hill, George A., Jr., Houston Oil Co	1429
Houston, Hon. John M., M. C	1771
Hunter, J. C., Mid-Continent Oil & Gas Association	1957
Kemnitzer, William J	1986
Lovejoy, John M., President, Seaboard Oil Co	1816
Marsh, Benjamin C., the Peoples Lobby	2138
Millikan, C. V., Amerada Petroleum Corporation	1672
Monroney, Hon. Mike, M. C	2029
Moore, E. H	1811
Orr, Charles L., Interstate Oil Compact Commission	1537
Robinson, Ernest O., Shell Oil Co	1730
Schilthuis, Ralph J., Humble Oil & Refining Co	1626, 1647
Schock, Clarence, Independent Petroleum Jobbers Association of Pennsylvania	1997
Schoeppel, Andrew F., Kansas Corporation Counsel	1525, 1536
Thompson, Col. Ernest O., Texas Railroad Commission	2100, 2142

Communications from—

Brown, Russell B., Independent Petroleum Association of America—Report No. 250	2111
Carey, W. Gibson, Jr., United States Chamber of Commerce	2048
Downie, Ernest R., State Farm Insurance Co. of Illinois, addressed to Hon. John M. Houston, M. C	2133
Hadlick, Robert W	2132
Hoar, F. Emerson, consulting engineer	2129

Communications from—Continued. Page
- Holland, G. W., United States Department of Interior, enclosing copy of table by Bureau of Mines covering receipts of domestic crude oil, by States 2135
- Kennon, W. H., attorney, San Antonio, Tex 2136
- Lehman, Hon. Herbert H., Governor of New York 2041
- Missouri Independent Oil Jobbers Association
- Moore, E. H., correspondence, with photographs 2113, 2114
- Staley, Glenn 2051
- White House correspondence 2168

Exhibits:
- Interstate Oil Compact articles 1541
- Interstate Oil Compact Commission minutes 1544
- Lea County, Tex., executive committee minutes 1657
- Legal brief of Tom Anglin and W. J. Holloway 1909
- Legal brief of Jack Blalock 1603
- Legal brief of Nathan R. Margold, solicitor, Department of Interior 2144
- Montana operating regulations re production oil and gas 2034
- Radio scripts 1869, 1924
- Report for 1939 by Geological Survey re outstanding features of oil field development and petroleum geology 1866
- Senate Joint Resolution No. 5, State of California 2034

Resolutions:
- Independent Oil Producers Association of Illinois 2033
- Ohio Petroleum Marketers Association 2040
- Oil Producers Agency of California 2033

PETROLEUM INVESTIGATION

MONDAY, FEBRUARY 19, 1940

House of Representatives,
Subcommittee of the Committee on
Interstate and Foreign Commerce,
Washington, D. C.

The subcommittee met, pursuant to adjournment, in the committee room, New House Office Building, at 10 a. m., Hon. William P. Cole, Jr., presiding.

Mr. Cole. The committee will please be in order.

It was previously arranged for the Interstate Compact Commission to be heard today, Colonel Thompson and such others as would be with him. The committee is sorry to learn this morning that the colonel is ill in Texas. At his request the compact group will not be heard today, but tomorrow.

The industry, speaking through the Independent Petroleum Association of America, the Mid-Continent Oil and Gas Association, the National Stripper Well Association, and the American Petroleum Institute, requested some time ago, following a conference with the chairman, that they be permitted to appear in answer to the case presented by the Government in the hearings of November, and be given this entire week to do so. The list of witnesses arranged by the associations I have just named is before the committee, as well as some of their prepared statements.

I understand it is agreeable to this group that they start the hearing this week, today, and that they will give way tomorrow for the Compact group. Then the balance of the week will be for the industry, if they require that length of time.

In addition to the witnesses presented by the associations I have just named, the committee has some request for time from others. They will be heard as promptly as possible.

I understand that the committee this morning is to hear Mr. George A. Hill, Jr. Mr. Hill, we will be glad to hear you.

STATEMENT OF GEORGE A. HILL, JR., HOUSTON, TEX., PRESIDENT, HOUSTON OIL CO. OF TEXAS

Mr. Hill. Mr. Chairman and members of the subcommittee, the proposed Federal legislation that is the subject of the hearings now being conducted by your honorable committee has received the earnest consideration of practically every group in the oil industry.

The entire industry is grateful to Chairman Cole for his frank, able and fair presentation to the members of the industry, in convention assembled at both Fort Worth and Chicago, of his understanding of the important issues to be decided by the committee.

Chairman Cole invited the assistance and cooperation of the industry in the development of the evidence essential to a full and complete study of the proposed legislation and the industry generally is now endeavoring to render such assistance and cooperation in accordance with the procedure which we believe to have the approval of your committee, viz:

First, the presentation of appropriate resolutions expressing the judgment of organized groups within the industry, relative to the proposed legislation; and

Second, the presentation of witnesses, assigned to specific subjects pursuant to an orderly program, designed to avoid duplication, and selected by and from representatives of the Independent Petroleum Association of America, the Mid-Continent Oil & Gas Association, the National Stripper Well Association, and the American Petroleum Institute, and the industry generally.

The witnesses who have been selected to offer evidence in opposition to the enactment of this legislation (in order to fully acquaint the committee, and the Congress, of the attitude of the members of the industry) are hereinafter named, in the order of their appearance, and with an appropriate designation of the subject assigned to them, viz:

1. An Analysis of H. R. 7372, and Brief Outline of Evidence the Industry Will Present, president, Houston Oil Co., Houston, Tex.

2. Phases of Legal History and Practical Operation of Conservation of Oil by the States in Relation to Ascertainment of Limits of Desirable Program of Assistance by the Federal Government, by Mr. Robert E. Hardwicke, Hardwicke & Chick, attorneys at law, Fort Worth, Tex. Mr. Hardwicke is chairman of the mineral section, American Bar Association.

3. Engineering Survey of Waste Prevention:

(1) Texas, Louisiana, and New Mexico, Ralph J. Schilthuis, engineer, Humble Oil & Refining Co., Houston, Tex.

(2) Arkansas, Oklahoma, Kansas, and Rocky Mountain area, Charles V. Millikan, chief engineer, Amerada Petroleum Corporation, Tulsa.

(3) California, Robert E. Allen, consulting engineer, Los Angeles. Mr. Allen represents the California Oil & Gas Association.

(4) Illinois, Kentucky, Indiana, Ohio and Michigan, E. G. Robinson, production superintendent, Shell Oil Co., Inc., St. Louis.

(5) Pennsylvania, Eastern Area, and Secondary Methods of Recovery, Forest E. Dorn, president, Forest Oil Co., Bradford, Pa. Mr. Dorn represents the Pennsylvania Grade Crude Oil Association.

(6) Summarization of Engineering Testimony and of Technological Advances Made in Producing Oil, Francis E. Heath, chief engineer, Sun Oil Co., Dallas, Tex.

4. Well Spacing, M. G. Cheney, president, Anzac Oil Co., Coleman, Tex.

5. Unit Operation, Winston P. Henry, president, Putnam Oil Co., Houston, Tex. Mr. Henry represents the Independent Petroleum Associaiton of America.

6. Stripper Wells, Jake L. Hamon, Cox & Hamon—independent producers—Dallas, Tex. Mr. Hamon is president of the National Stripper Well Association.

7. Market Demand as Related to Conservation, Harold B. Fell, Simson-Fell Oil Co., Ardmore, Okla. Mr. Fell is executive vice president of the Independent Petroleum Association of America.

8. Comment on Testimony of Federal Government Witnesses, John M. Lovejoy, president, Seaboard Oil Co., New York.

9. Comment on Propaganda of Department of Interior, Russel B. Brown, general counsel, Independent Petroleum Association of America.

10. Constitutional Argument: Submission of legal brief prepared by Senator Tom Anglin, Holdenville, Okla., and former Governor William J. Holloway, Oklahoma City, Okla.

11. Final Summarization of Testimony Presented by the Industry, J. C. Hunter, president, Gregg Oil Co., Abilene, Tex. Mr. Hunter is president of the Mid-Continent Oil & Gas Association.

Mr. Cole. Mr. Hill, will these gentlemen be heard in the order listed on this paper?

Mr. Hill. That is correct, Mr. Chairman. Since finishing writing of this paper, there has been a slight change and I do not have it incorporated in this copy, but I will read the two additional papers. There will appear as No. 7 under the subject "Land and Royalty Owners, Mr. Frank Buttram, Oklahoma City, president, Buttram Petroleum Corporation, president, Independent Petroleum Association of America. And under 9, Mr. Paul Greever, Cody, Wyo., on behalf of the Rocky Mountain Oil & Gas Association.

I will deliver to the secretary of the committee here this revised list.

(The revised list of witnesses is as follows:)

List and Order of Petroleum Industry Witnesses

1. An Analysis of H. R. 7372; and a brief outline of the evidence industry will present. Witness: George A. Hill, Jr., president, Houston Oil Co., Houston, Tex.
2. The Legal History of the Conservation of Oil and Gas by the States. Witness: Robert E. Hardwicke, Hardwicke & Cheek, attorneys at law, Fort Worth, Tex. Mr. Hardwicke is chairman of the mineral section of the American Bar Association.
3. Engineering Survey of Waste Prevention.
    - A. Covering Texas, Louisiana and New Mexico. Witness: Ralph J. Schilthuis, engineer, Humble Oil & Refining Co., Houston, Tex.
    - B. Covering Arkansas, Oklahoma, Kansas and the Rocky Mountain Area. Witness: Chas. V. Millikan, chief engineer, Amerada Petroleum Co., Tulsa, Okla.
    - C. Covering California. Witness: Robert E. Allen, consulting engineer, Los Angeles, Calif.; representing California Oil & Gas Association.
    - D. Covering Illinois, Kentucky, Indiana, Ohio, and Michigan. Witness: E. G. Robinson, production superintendent, Shell Oil Co., St. Louis, Mo.
    - E. Covering Pennsylvania and Eastern Area and Secondary Methods of Recovery. Witness: Forest E. Dorn, president, Forest Oil Co., Bradford, Pa., representing Pennsylvania Grade Crude Oil Association.
    - F. Summarization of Engineering Testimony and Technological Advances Made in Producing Oil. Witness: Francis E. Heath, chief engineer, Sun Oil Co., Dallas, Tex.
4. Well Spacing. Witness: M. G. Cheney, president, Anzac Oil Co., Coleman, Tex.
5. Unit Operation. Witness: Winston P. Henry, president, Putnam Oil Co., Houston, Tex.; representing Independent Petroleum Association of America.
6. Stripper Wells. Witness: Jake L. Hamon, Cox & Hamon, (independent producers), Dallas, Tex.; president, National Stripper Well Association.
7. Land and Royalty Owners. Witness: Frank Buttram, Oklahoma City, president, Buttram Petroleum Corporation; president, Independent Petroleun Association of America.

8. Market Demand as Related to Conservation. Witness: Harold B. Fell, Simpson-Fell Oil Co., Ardmore, Okla.; executive vice president, Independent Petroleum Association of America.
9. Paul Greever, Cody, Wyo., on behalf of Rocky Mountain Oil & Gas Association.
10. Wildcatting. Witness: E. H. Moore, Tulsa, Okla., independent producer, and on behalf of Independent Petroleum Association of America.
11. Comment on Testimony of Federal Government Witnesses. Witness: John M. Lovejoy, president, Seaboard Oil Co., New York, N. Y.
12. Comment on Propaganda of Department of Interior. Witness: Russell B. Brown, general counsel, Independent Petroleum Association of America, Washington, D. C.
13. Constitutional Argument. Submission of legal brief prepared by Senator Tom Anglin, Holdenville, Okla., and ex-Governor Wm. J. Holloway, Oklahoma City, Okla.
14. Final Summarization of Testimony Presented by Industry. Witness: J. C. Hunter, Abilene, Tex., president, Gregg Oil Co.; president, Mid-Continent Oil & Gas Association.

Mr. HILL. That contains the names of witnesses not contained in my original paper. In addition to that, Mr. E. H. Moore, Tulsa, Okla., independent producer, a witness on behalf of the Independent Association of America.

This list also contains the name of Mr. J. C. Hunter, Abilene Tex., president, Gregg Oil Co. (president, Mid-Continent Oil & Gas Association), who will speak on a final summarization of testimony presented by industry.

My assignment is to present an analysis of the proposed bill.

My profound and unreserved respect for the committee—its patriotism, its disinterested impartiality and patience, its judicial attitude and procedure, and its high capacity is well known in the industry and I am sure is well known to the committee; and I, therefore, feel assured that the committee will receive my opposing viewpoint in the spirit in which it is submitted.

I have endeavored to appraise and analyze the proposed legislation from two viewpoints: (1) As a matter of governmental policy; and (2) On the merits of the bill, as drafted.

The legislation, when considered as a matter of governmental policy, cannot be, in my judgment, disassociated from the new conception of the functions of the Federal Government advocated by that school of political thought that seeks to substitute a system of regimented industry and managed economy (accomplished through Government ownership and/or regulation and Government planning), for the American system of individual initiative and free competitive enterprise that has characterized American industrial life and American political institutions throughout the history of the Republic until recently.

The advocates of this particular legislation, and the advocates of other similar legislation recently adopted and now in effect, have not always been entirely frank in disclosing the part of this particular item of legislation in the new social and economic program that is implicit in a Government-regulated industry and a Government-managed and planned economy. This legislation is designed to substitute Federal Government control and regulation of petroleum for State regulation and control by the several States under the reserved powers of the States secured to them under our constitutional system of Government, in accordance with historical interpretations of the powers reserved to the States.

As hitherto interpreted, the act of production was not commerce, and hence not interstate commerce, and hence not within the legitimate purview of Federal jurisdiction; and likewise, the simple act of production of oil has not hitherto been deemed so inseparable a part of national defense as to warrant the assertion of superior Federal control over the power of the several States to regulate production of petroleum and its conservation.

The recitals in the bill, therefore, with reference to the obstruction of interstate commerce and the impairment of national defense as the bases for the assumption of Federal jurisdiction must be viewed as the narrow and specialized (and I verily believe specious) grounds upon which the forces advocating Government control of industry and Government-planned economy really seek to enact this legislation, although they support the political philosophy that the Federal Government can do anything in aid of the general welfare.

Federal industrial-control acts covering different subject matters are fashioned in the same politico-economic mold and indulge certain general assumptions that are, perhaps, spurious:

1. That Government control and regulation of industry is superior to private management and control;
2. That Federal regulation is superior to State regulation; and
3. That individual human probity, capacity, energy, and fidelity rise to new heights of efficiency, when engaged in Federal Government employ.

There are several substantial reasons why this legislation must be considered as a part of a general program of reducing and submerging free initiative and independent enterprise into a general system of Government-regulated and managed economy:

1. This legislation is not advocated by the oil industry but has been variously and specifically repudiated by practically the entire industry.
2. This legislation is not advocated by the several oil-producing States or the oil regulatory commissions therein but, on the contrary, is repudiated energetically by the regulatory bodies of the several States now engaged in the field of regulation sought to be covered by the proposed legislation.
3. The Federal Government is now exercising its constitutional and historical powers of regulation over the industry in relation to interstate and foreign transportation and many other phases of the industry in common with other industries such as minimum wages and maximum hours, and so forth.
4. The genesis of the bill and its authorship is in a department of the Federal Government now exercising certain economic and advisory functions for the industry and such departments of the Federal Government is itself seeking the new comprehensive and authoritarian powers conferred by this legislation.
5. There can be no lawful or practically dual regulation of the production of oil by the State and Federal Government within the same fields or spheres of regulation and hence there is an attempted seizure of power at the expense of existing and established (or reserved) authority.

The impact of war, the imminence of war, or the fear of war are each the cause or the excuse for the transfer or assumption by central government of war powers which necessarily are withdrawn from the reservoir of individual rights and freedom, temporarily or permanently.

In this instance, the legislation is sought to be made permanent on the tenuous tie to the fear of war and the claimed necessities of national defense rather than the thin thread of claimed obstruction to interstate commerce. The program of Federal regulation of industry and Government-planned economy sought to be established and entrenched in this county and of which program this legislation is a part, has had its parallel abroad. There "political democracy and economic liberalism" have been supplanted in western Europe "by moving away both from democracy and individualism and toward systems of State planning and collective control—that is, the assumption by government of greatly expanded functions. This has taken different forms in different countries such as sovietism in Russia, fascism in Italy, and national socialism in Germany; but fundamentally, each of these is a system of government controlled and managed economy."

In Russia, the same formula, viz, government control of industry and government planned economy resulted in (*a*) government ownership of industry; (*b*) government-planned economy; (*c*) the consequent elimination of free initiative and enterprise; (*d*) the erection of the soviet dictatorship.

In Germany the same formula resulted in (*a*) government regulation of all industry; (*b*) government-planned economy, the strictures and impositions of which virtually assumed the attributes of ownership; (*c*) the stifling and substantial elimination of free initiative and enterprise; (*d*) the erection of the Nazi dictatorship in which the state is deified and individual freedom suppressed.

In Italy the same formula resulted in (*a*) government regulation of all industry; (*b*) government-planned economy—the corporative state; (*c*) the surrender of private enterprise to government direction; (*d*) the creation of the Fascist dictatorship in which all have become the servants of the state.

It is born of the false philosophy that individual initiative and enterprise have failed, although such have made this country great; that the incentive arising from ownership and management are inferior to those emanating from the Government pay roll; that the public service attracts the higher and more competent types; that the procedures and motives governing political appointments excel those governing private employment and promotion.

I believe that the validity of the observations made with reference to the general program for Government control of industry is fully sustained by every important school of political thought, as is well illustrated by these three separate evaluations of the present trends in our Government:

1. A neutral estimate appearing in the annals of the American Academy of Political and Social Science of November 1939 dealing with Government expansion in the economic sphere, in which appears an article by Prof. Everett Deal Martin on the subject of The Place of Government in Modern Economic Society.

2. An antiadministration article entitled, "Remember the States," by T. Jefferson Coolidge, appearing in The Atlantic Monthly of January 1940.

3. The proadministration editorial in the January 13, 1940, issue of The Nation.

Professor Martin, as a neutral and impartial observer, states as follows:

The traditional liberal theory and practice held that government derived its functions and powers from society. The tendency now is to reverse this procedure and to determine the powers and liberties of the members of society by government.

Everywhere, government, in attempting to give service to society, tends to become no longer servant but master. To others, the growing dependence on Government, both local and Federal, the multiplication of services, the trend toward official control and management of our economic system, the centralization of authority and its concentration in the Executive, the swarm of bureaus, commissions, planners, and Government agencies of all sorts, many of which exercise powers which are at the same time quasi-executive—legislative, and judicial, the enormous increase in the burden of taxation and public debt—all seem to point in the same direction. One is not necessarily a "copperhead" or an "economic royalist" if he notices that the signs on the road we are traveling point toward the destruction of the American Republic as we have known it.

The hope that we can have governmentally planned economy without dictatorship—that is, tyranny—is a faith which has no support either in the logic of the situation or in historical precedent.

There is a psychological law of government which social scientists should not forget. The law is this: All government tends to expand itself at the expense of the lives, the liberties, and the property of the members of society. This law applies to all types of government, democracy included.

So it may be said that as government is extended, the progress of society declines. The historical arguments in support of this truth are overwhelming, both in ancient times and in our own time. The outstanding example in the world today is Germany. The converse of this proposition is also true. As government was made to mind its own business after the passing of the mercantile system, in the same measure the material and cultural progress of the nineteenth century took place. Such progress occurred only when and where limited constitutional governments were established. It begins to vanish the world over, with the appearance of planned economics and dictatorships.

Certain observations are therefore to be made in just the measure that we see government expanding.

1. Governments are eating up the patrimony of society. The standard of living is falling the world over, wealth is exhausted in nonproductive activities and in preparation for war, and new capital investment is everywhere discouraged. Tariffs, governmental restrictions on trade, and bureaucratic regulations have done much to bring about the present economic depression. Government's efforts to cushion the depression have only prolonged it and increased the number of unemployed who must be fed out of industry already overburdened by taxes and lacking in confidence in the future.

2. Governments are destroying what little world order has been achieved since the time of Hugo Grotius. The international fellowships of industry and culture are broken up by political nationalism and by the necessity of all planned societies to put their people in military uniform and on a war footing.

3. Governments are destroying the liberties of the modern world. Most obvious in the totalitarian states, where all constitutional guarantees of personal rights are gone, the tendency reaches also into the democratic states. It is unthinkable that any government with power to control the economic life of a nation will or can stop short of control of opinion and speech. Hence there must follow censorship, concentration camps, and the liquidation of minorities.

4. Governments are destroying the culture of the modern world. In central Europe there is return to persecution, and to propaganda which is lacking in respect for truth. Elsewhere even in the democracies, there is going on a slow process of destroying those classes in society which in all historic time have created our culture, advanced learning, and tried to reserve respect for the moral values of civilization. With the extension of government, chief concern is given to undifferentiated man, mass man; hence world-wide decline in appreciation of human worth of reverence for excellence. As government is extended, economic scarcity and democratization of subsidies go hand in hand with it. As these prevail, the economic interest reigns supreme. A crass utilitarianism, mingled with the cynicism of radical politics, supplants respect for the human spirit, and one sees the "abomination of desolation standing where it ought not."

The tenor of the article by Mr. T. Jefferson Coolidge is hostile to the present administration, and what follows should probably be termed as an unfriendly estimate of present trends in Government:

> From 1861 to 1865 a great civil war raged in this country—one side determined, to set up its own government, the other to preserve intact the Union of States. The Federal Government won the war, and there followed what is known as the reconstruction era, during which Federal power usurped throughout the South the functions of local government. The result is well known—democratic government perished and a desperate era set in, bringing disorder and corruption, want and poverty, to a great section of our country. Today once more there are forces, led by the administration, desiring centralized Federal control over local affairs. If these forces triumph, the Union of States will be only a name and there will be one consolidated government before whose power all citizens must bow, and their obeisance will not be to the laws of the Congress but to bureaucratic rulings and the power of the spending purse. Under such centralized power, government by the people will perish, and with it democratic government. "Today the money comes from Washington, collected from all the citizens of the country, while a Federal bureaucracy decides whether or not the city shall have new facilities. The citizens want the money spent in their city; it is not their money, and yet they alone will enjoy the benefits. The main responsibility of their elected officials is to get the money from Federal bureaucrats. This is not government by the people through their chosen representatives. It is rule over the city by Mr. Ickes, Mr. Hopkins, or successors, through the power to give or not to give, and yet these gentlemen have no responsibility to the interested citizens.
>
> The belief that our State and local officials are not competent to handle our individual affairs is a belief that democracy and free enterprise will fail, and is not worthy of a great and free people who believe in self-government. We must recognize that our country is too large, the interests and conditions too diversified, for the people to govern themselves from Washington in domestic affairs. Either the people must govern locally or they must be ruled from Washington. Home rule has been the credo of the great liberals, yet the Federal administration acts as though the people and their sovereign States were incompetent and unable to decide their most minor problems, let alone govern themselves.
>
> Now, for 150 years we have been a united Nation composed of self-governing units with a free economy little hampered by Government restrictions. Under this system we became the envy of the world—by far the most prosperous nation ever known, with the highest general standard of living. Our land was the land of opportunity for all. Of course, there were abuses and inequalities to be remedied, but these are capable of being handled within the fundamental principles of our society. A drastic change in these principles will create abuses and conditions far worse than those that exist.

The Nation in its editorial policy may be safely classed as friendly to the present administration in its objectives. The following quotation may, therefore, be taken as a friendly estimate of what has been and is now the trend and objective of our national administration in relation to the economic life of the Nation:

> The contrast between the measures Mr. Roosevelt advocated in 1932 and those he has since applied testifies to the "quarterback" flexibility of mind on which he has always prided himself. In a larger context the contrast reflects the world trend to State domination of economic life; and the hope of reversing it, with a new war under way, is fantastic. The real need is to recognize the trend, the breakdown of private capitalism that brought it about, and the new policies for which it calls. We still cling to "bootstrap economics," but we cannot go on spending forever. The next step must be for the Government to take over certain sectors of private enterprise so that its expenditures may be poured into productive channels rather than into the bottomless pit of subsidizing consumption.

Volumes could be filled with quotations from the publications of eminent authorities to support the thesis that the dominant trend of Federal authority is to supplant individual initiative and free enterprise with Government controlled and managed economy.

Under date of January 15 another Bureau of the Government, the Forest Service, proposed that the Federal Government be given authority to regulate lumber cutting on privately owned land to prevent depletion of the Nation's forest resources. The Associated Press dispatch relating to this matter is as follows:

UNITED STATES URGED TO RULE ALL TIMBER LAND

FOREST SERVICE ASKS CONTROL OF CUTTING ON PRIVATELY OWNED AREAS

WASHINGTON, January 15.—The Forest Service proposed today that the Government be given authority to regulate lumber cutting on privately owned land to prevent depletion of the Nation's forest resources. It also recommended that public ownership and management of such land be extended. In an annual report prepared by its late Chief, F. A. Silcox, the Service said privately owned forests represented "an empire of such social and economic importance that we no longer can afford to ignore it or leave it unmanaged without serious consequences for the entire Nation."

The Service estimated that privately owned forest land of commercial value was three-fourths of all such land in this country.

This is cited as one of many numerous examples of a concentrated attack upon private enterprise.

Fortunately, or unfortunately, as the case may be, we are left in no doubt as to the administration's policy with respect to intended Federal control of petroleum.

The report of the Energy Resources Committee to the National Resources Committee transmitted by the President to the Congress under date of February 15, 1939, is quite specific. There appears a summary in one of the earlier chapters of the report on Energy Resources and National Policy which contains the following statements on page 36.

Before I resume, I would like to say parenthetically that I understand from the press reports that the Committee on Appropriations of the House has failed to recommend the appropriation for the continuation of this committee on two grounds. First, that the Congress never authorized the formation of any such committee and second that its past support has come from an appropriation designed for relief.

Mr. COLE. I think that is correct.

Mr. HILL. If that be correct it throws some light on the gratuitous nature of the recommendations.

Mr. COLE. Of course, the distinguished body at the other end of the Capitol saw fit to put it back in the bill. It is in there.

Mr. HILL. I did not know that, but that does not change the nature of the indictment.

Mr. COLE. It will probably remove a few counts from the indictment. [Laughter.]

Mr. HILL. In the preliminary observations of this committee in which they laid a broad basis for this particular subject appeared this:

THE GENERAL WELFARE

It is well to remember that the present and proposed regulatory measure discussed in this summary are designed to promote the development of the energy resources industries along the lines that will be consistent with the broad national interest. The problems of conservation which dictate these measures are not the result of passing emergencies. Rather, they are continuing problems, and if they cannot be solved by the regulatory approach than we may anticipate with some confidence that there will emerge an insistent and eventually irresistible demand for public ownership and control.

> The paramount responsibility of government is to protect the general welfare. That way lies safely and a progressive evolution of our economy and of our political institutions. The lessons of European developments emerging economic and social problems, to fail to forsee the threatening forms they will assume, and to fail to work out logical plans for solving these problems is to neglect the general welfare and to pave the way for extremists No amount of confusing legalistic discussion of limitation of powers can obscure the reality of the choice before us. We must evolve ways of protecting the general welfare or face the consequences in mass discontent. To protect the general welfare in our time—in an industrialized and urban economy—means above all else to build and maintain in good order a sound economic structure. In an industrial civilization the energy resources constitute the foundation stones in that structure.

Commencing on page 214 of the report appears chapter 7. "Proposals for Petroleum and Natural Gas Conservation." The need for Federal regulation is attempted to be shown by some of the following statements:

> The States have passed many laws concerning methods of operation and protection of reserves, but probably the States' main interest has been in restricting production in order to raise the price or to keep it from falling.

Of course, the foregoing statement is a gratuitous and unsupported and wholesale condemnation of what really constitutes magnificient progress in oil conservation.

Another ground cited for such need of Federal regulation is—

> The desire of a State to obtain tax incomefro m the industry probably has led it to underestimate the importance of conservation of reserves.

Such statements as the foregoing imply a knowledge with respect to a State's desire for tax income, as measured against its estimation of the importance of oil conservation, which is an intangible something beyond reasonable human ken and is a most indefinite and improbable statement to support a claimed necessity.

There appears the following statement:

> Most of the States have been reluctant to restrict production unless comparable restrictions were applied to adjacent States; moreover, they have been unwilling to accept the Federal Government's determination of how much oil the individual States should produce, although during and since the National Recovery Administration they have continued to accept the Bureau of Mines' monthly suggestion as a basis for arriving at the total allowable.

Of course the foregoing statement is self-contradictory unless the author of the report makes a distinction between "The Federal Government's determination" and "the Bureau of Mines' monthly suggestion." Likewise the statement above that "the States have been reluctant to restrict production" is diametrically opposed to the previous-quoted statement that "the State's main interest is to restrict production," which further conflicts with the statement that the State's main interest is taxes. Indeed, the above-quoted statement makes out a magnificent case of the power of suggestion in contradiction to Federal Government determination if what the author proposes is a determination that shall have the force of compulsion.

Another reason cited for the need of Federal regulation is the following statement:

> Control of well spacing undoubtedly has furthered conservation, but as yet no State has attempted to solve the problem by a comprehensive scheme of requiring the most efficient production of the limited reserves of oil and gas. Rarely has a State made an attempt to retard the bringing into operation of new fields, even though the new supplies might mean an unscientific restriction of production in older fields.

Thank God that no State has made the attempt to retard the bringing into operation of new fields and thereby institute this recommended tyranny, under whatever claimed scientific superefficiency might be urged for such Government expropriation of private property. The above quotation is but one of many striking examples of honest but unthinking administrative zeal that sweeps aside the Bill of Rights and other constitutional guaranties as impediments to the New Freedom.

Yet another reason assigned (and perhaps this is the milk in the coconut) is as follows:

> Under the present Federal-State system of proration, the initiative lies with the States, and the Federal Government is unable except by suggestion to initiate any general improvement in production procedure or in standardized regulation of the industry throughout the country.

The power of suggestion is all that the Constitution permits of the Federal Government in this particular sphere and there is no desire upon the part of the States or of the industry to transfer the initiative to the Federal Government, or to change our constitutional system, and it should never be forgotten for a moment that the industry itself and the States within whose borders such deposits of petroleum are located, have a vital, direct and immediate interest therein that transcends the interest of the Federal Government in terms of every reasonable human motive. Unnecessary waste represents to them actual and not theoretical loss.

Another statement cited in support of Federal legislation is as follows:

> Whenever the general public becomes sufficiently impressed with the threatened shortage of petroleum products and the possible rises in prices for motor fuel, then the complex problem of regulating the oil and gas industry is likely to be transferred to the Federal Government.

This argument is to the effect: "Eventually, why not now?" Of course this is ludicrous in the light of the actual record of the tremendous increase in petroleum reserves and the tremendous reduction in gasoline prices accomplished in the last 15 or 20 years.

Another argument in the same vein of "Eventually, why not now?" is contained in the following statement:

> Threatened increases in prices of petroleum projects may in time lead to a reaction against the control or production by the producing States alone. In addition—

And bear this in mind—

> any serious national emergency is certain to call forth Federal intervention. The sooner preliminary regulation of the industry is initiated, the greater will be the savings in conservation and the more immediate the effective solution of regulatory problems. The question of whether the Federal Government has power to conserve oil and prevent waste will be discussed in a later section.

Murder will out. This bill is, then, merely "preliminary regulation." Anticipating threatened price increases and a national emergency and therefore certain "Federal intervention," the argument is that the States and the industry should admit the inevitable and submit to a light anesthetic in the form of preliminary regulation before the severance of the jugular vein comes, with a complete system of Federal control and regulation.

The pretext of maintaining an adequate national defense is refuted by the very witnesses from the departments of the Government, as will be fully demonstrated in a review of their testimony by another witness.

Thus far I have considered only the generalities submitted in support of the claimed need of Federal legislation.

Then follow "specific problems" for legislation which are startling and which represent totalitarianism rampant. For instance:

> The following problems encompass also the prudent utilization of the recovered petroleum and natural gas so that more urgent uses be given priority and so that a considerable portion of the heavier and less valuable oils be obtained from abroad.

In brief, a scientific dictator will determine what constitutes "prudent utilization" and what are "the more urgent uses thereof" and the relative priority of each use and also what shall constitute "heavier and less valuable oil" and which of the same shall be obtained from abroad and by whom and from what places and in what quantities.

In other words, "ersatz" cards are already being forecast in this report in a typical Nazi dictation of the sources and uses of petroleum and its products in this country.

The next observation, which is made in a preliminary way, hurdles the necessity for constitutional amendment and naively states:

> The suggested legislation is based on the conviction that private rights in the control and production of petroleum must be so modified that the Nation can defend itself against the physical waste and uneconomic uses of these irreplaceable resources.

Again, murder will out. We now find in the unfolding scheme that it is not merely physical waste that is of grave concern but now uneconomic uses rears its ugly head for dictatorial definition by authoritarian government.

Then follows a recital of "specific problems" in general terms:

> The most important proposal of this study relates to the introduction of unit operation of oil pools under the immediate supervision of State commissions which require the observance of satisfactory engineering practices. Unit operation, then, is the opposite of the present competitive system of wastefully developing oil pools. The second proposal relates to the adoption of certain minimum engineering standards by State and Federal regulatory bodies, which are to apply to the development and operation of oil and gas fields. The third proposal relates to the restriction of abandoning old oil and gas wells as long as they are still in a state of production. Another proposal relates to the methods by which production can be most satisfactorily restricted to current needs. This proposal provides for the Federal determination of the production quotas for each State and for a State allocation of these quotas based primarily on acreage allowables or on some other approximation of oil in place. Regulation of production should be aided by a rational policy on exports and imports, undertaken with the aim of conserving the Nation's reserves. With respect to the use of petroleum products it is proposed that consumption be restricted to more urgent needs and that the cheaper and more abundant supplies of fuel be used wherever they can. In addition, this report recommends continued Government research in production and distribution methods of the oil industry, as well as further investigation of the public interest in the adequate regulation of the oil and gas industry.

I shall not endeavor to analyze each of these problems but shall present from the report itself a number of audacious and tyrannical suggestions that are seriously proposed in the consummation of what is described in the report as the most important proposal, viz: the introduction of compulsory unit operation of oil pools:

(1) It is stated that—

> the major characteristics of unit operations are preliminary exploration in the case of new fields, compulsory pooling of interests, proper well spacing, acceptance

of standard development and production methods, controlled withdrawals, and scientific control.

These items are separately defined in more realistic terms and they will be considered seriatim.

The admission is made that—

> effective unit operation requires the compulsory pooling of both operating and lease interests. Such an arrangement undoubtedly would require State legislation providing for unit agreements and new lease forms to replace present lease obligations.

To begin with, then, the Federal scheme plainly recognizes that it would substitute compulsion for private bargaining with both the landowners and oil operators, which presupposes some all-wise paramount authority to design the pooling agreement to which the operators and landowners shall be subjected. The violation done to both the Federal and State constitutions is waved aside with the simple observation that "such an arrangement undoubtedly would require State legislation." It presumes that countless existing lease contracts of every kind and description made by hundreds of thoussands of American citizens under their constitutional right of contract in relation to their private property can be nullified by an act of the legislature substituting "new lease forms to replace present lease obligations." This represents the modification of property rights with a vengeance, and to what end? To satisfy the judgment of the author of this particular segment of Federal planning.

The next admission is a gratuitous reflection upon the oil operators in the United States as compared with those in Great Britain, Russia, Iran, and Iraq:

> A voluntary unit operation scheme has been demonstrated to be inadequate for the purpose of achieving important gains in oil conservation on a Nation-wide or State-wide basis. A voluntary scheme is easily blocked or may be subject to dissolution because of the lack of trust among the participators. In the United States owners of diversified lands have not shown much willingness to form unit schemes. In many respects voluntary operation is more desirable than compulsory unit operation, but it cannot be achieved except in rare instances.

The preceding statement admits the improbability of unit operation on a large scale for many of the reasons therein cited and certainly it is apparent therefrom that the people primarily at interest find unit operation unacceptable. To asperse the judgment of the American operators the statement is made that "The advantage of compulsory unit operation is considered so great that England is now making provision for any possible oil field which may be discovered in Great Britain, has provided in the British Petroleum Regulations of May 15, 1935, for cooperation among lessees of one geological unit, to be effective at first voluntarily, failing which the Government, through the Board of Trade, has the power to require unit operation 'subject to the right of arbitration.' " This seems intended as a very serious suggestion yet there has probably been no important unit operation in Great Britain for the past 4 years due to the absence of any oil pools of consequence to unitize.

There next follow statements of how existing legal and title difficulties should be composed in compulsory unitization, including such novel provisions as "the sharing of crude-oil receipts among owners whose property lay entirely over the gas cap or for some basis of equating the oil and gas in the same reservoir."

Of course the foregoing is a purely speculative solution such as the suggestion that "royalty rights might be justly based upon acreage" and that "the State might require the postponement of production until the energy in the gas cap is measured and until a plan is devised for compensating the owners by their sharing in the production from the other districts in the field on some proportionate basis."

Suggestions of this sort, which are necessarily involved in compulsory unit operation, demonstrate a purpose and willingness to interfere with vested property rights at great length in pursuance of a scheme planned largely on speculation and surmise as to what exists in an unexplored and undeveloped reservoir.

Other suggestions have been made as follows:

(*a*) Probably the importance of the gas cap in most structures has been overemphasized.

(*b*) Although the evlauation of the gas cap in relation to the oil-bearing parts of the structure is not a simple problem, surely a satisfactory method of equating the values of free gas and oil in the reservoir could be found.

(*c*) A satisfactory formula could be worked out for converting energy credits into oil credits.

That is a brand-new one.

(*d*) The solution of this problem might include legislation by the State providing that the reservoir energy should be common property of all owners of mineral rights in a pool.

(*e*) The State, through the legislature or courts, might require the deferring of the use of free gas at the top of the pool until all the recoverable crude oil has been obtained, at which time the owners of the gas cap would share in the royalties from the production according to the original location of the gas.

(*f*) The police power of the State could probably be extended to require complete postponement of use or joint sharing among owners of oil and of gas in the same oil and gas pool.

(*g*) Under compulsory unit operation State regulatory commissions might well require the closing of some wells when the plan is set up in fairly new fields and the sharing of royalties from the remaining producing wells among property owners in the pool unit.

All of the foregoing statements presuppose the ability in advance of development to accurately delineate subsurface conditions and to compel the owners of property to pool their various interests in accordance with some prearranged plan or scheme that provides in advance all of the answers for the operating problems of the future, which is a false assumption of high degree. Throughout the whole discussion there is an adroit avoidance of any reference to the financial obligations involved in such compulsory partnership. There is no mention of whose duty it shall be to furnish the money, not only for the initial exploration and development, but for succeeding development costs. There is no effort to describe the method of determining who shall be the operating party or operating parties. There is no attempt to describe the procedure by which the countless executive and operating decisions involved in future operations shall be resolved, and whether or not that compulsion which seizes one's land for the purposes of unitization, shall likewise subject him involuntarily to debt, the incurring of which he has no part in, and the increase of which he cannot prevent. There is no effort to describe the landowners' right to resist ejection from his home if the operator of the unit desires to use it for storage facilities, a recycling plant, or some other surface use. Countless very practical situations exist which are not dealt with in this theoretical discussion.

The crowning justification for the advocacy of this compulsory plan is under the paragraph on page 220 of the report, which reveals the extent of the adoption of unit operation and which is as follows:

> Unit operation is invariably practiced in those countries where mineral rights are the property of the State or where concessions covering large areas are given to single operating companies. Thus, in Soviet Russia, unit operation is practiced by State trusts, and in the major fields of Iran (Persia) and Iraq unit operation is practiced by the foreign oil companies which hold concessions in these two countries. Unit operation is regarded so highly by British oil companies that they were partially responsible for the enactment in Great Britain of a law whereby unit development may be enforced in the event petroleum is discovered in commercial quantities. Unit operation is also practiced in parts of Venezuela, where foreign oil companies hold large contiguous blocks of leases.
>
> Voluntary unit operation has been practiced in the United States for many years and particularly since about 1927, when a period of overproduction stimulated interest in unit control as a stabilization device. Perhaps as many as 30 pools or sections of pools are operated under some kind of unit management at the present time, but these make up a very small percentage of the total production.

It will be noted that the operations have been in those countries, viz, Soviet Russia, Iran, and Iraq and Venezuela where the minerals are already owned by the nation. The only other foreign country is Great Britain, where they have a good law but no important oil production. In the United States there is very little unit production except upon unit schemes on Federal land. However, every large leasehold that embraces an entire pool is, in the very nature of things, a unit operation on a voluntary basis.

It is admitted that the principal accomplishments are in Iran Iraq but under the head of "Accomplishments," the following comparisons are made:

> The average production per well in the Kirkuk field in Iraq and in the Haft Kell field in Iran (Persia) in 1935 was nearly 50 times the average production per well during conditions of peak production in 1933. More than 20,000 wells in east Texas were used to obtain a production of 205,000,000 barrels in 1933, whereas in the Kirkuk field 45 wells were sufficient to produce 27,000,000 barrels of oil in 1935, and in the Haft Kell field 40 wells were sufficient to produce 27,000,000 barrels in the same year.

It is significant that the only comparison involved is upon the basis of average production per well per annum in which the conservationists favor the high rate of production in Iran and Iraq without presenting any other data faintly indicative of conservation in the process.

The foregoing limited review, in merest outlines, of what the Federal planners have designed for petroleum in the Government control of industry and in Government-managed economy, has been presented for the purpose of demonstrating:

First. That this bill is merely preliminary legislation.

Second. That prevention of "physical waste" is a purely preliminary approach.

Third. That the prevention of "uneconomic uses" is the real objective, which will effectuate complete economic control over uses, products, refining processes, domestic production, foreign importations, priorities, and so forth.

Fourth. That modification (and in effect, practical expropriation) of property rights in petroleum and gas deposits is advocated and planned and with no purpose or intention of seeking constitutional amendments to legalize the scheme.

Fifth. That Federal control and ownership are in early contemplation and this bill in this scheme is designed to accomplish an easier advent of the general plan.

No regulation is, for long, more effective than the sanctions of the public sentiment that support it. State regulation has the virtue of being:

(1) In the accepted constitutional realm of State authority;

(2) It is supported by an enlightened public sentiment that has developed slowly and is based upon knowledge of the subject matter;

(3) Propinquity enables frequent hearings, conferences, large attendance of operators at meetings, and cooperation;

(4) An existing body of judicial interpretation is of aid to State administration;

(5) Real opportunity for prompt judicial review is important;

(6) State and Federal judiciaries in the oil-producing States have much judicial experience in the legal problems involved;

(7) State legislators have better opportunity to be informed than Congress as a whole.

Federal control has the following disadvantages:

(1) Oil administration of the whole United States is but one of innumerable activities of an already overburdened department;

(2) The scope of the regulated fields is such that an enormous personnel would be necessary;

(3) The distances involved would make hearings too costly and poorly attended, etc., to be of maximum value;

(4) Administrative action would be practically final because of practical impossibility of prompt judicial review.

In considering the efficacy of Government regulation and planning, the following are perhaps a few simple considerations that may be worth while:

It cannot be successfully demonstrated that—

(1) Federal regulation of production is superior to State regulation;

(2) Government conduct of business is more efficient than private conduct.

Under the new system of Government-planned and -managed economy, it can be successfully demonstrated:

(1) That Government debt has been enormously increased and is increasing;

(2) That Government bureaus have been enormously increased and are increasing;

(3) That Government employees have been enormously increased and are increasing;

(4) That Government taxes have been enormously increased and are increasing;

(5) That Government invasions of the field of private enterprise have been enormously increased and are increasing;

(6) That Government dependents and pensioners have been enormously increased and are increasing;

(7) That Government subsidies to private undertakings have been enormously increased and are increasing.

Each and all of these facts eloquently argue against the further extension of Federal control, regulation, power, employment, taxes, etc., to an industry that has not been and is not now the recipient of Government subsidies, grants, allotments, or gratuities and that actually produces, in various forms, in excess of a billion dollars annually for various governmental tax-collecting agencies with a constantly improved and cheapened product supplied to the public through facilities of service that are unexcelled in all American industry, and with a high wage scale for labor.

Only under a system of free enterprise can the industry discover and maintain adequate resources for use of the nation at reasonable prices. A Federal strait jacket to ostensibly achieve greater efficiency would slow down exploration and soon we would witness declining reserves.

Having presented objections to the bill, H. R. 7372, as a matter of governmental policy, the bill itself will now be considered and analyzed in detail.

The "findings and declaration of policy" contain recitals that are clearly strained and perhaps even duplicitous. The recitals that "the employment of methods and practices which are wasteful of petroleum and reservoir energy is inimical to the maintenance ot reserves of petroleum and of the facilities for the recovery and transportation thereof available for military and supporting civilian needs in an adequate national defense" are offensive to one's sense of straightforwardness when put forward as a justifiable basis for the usurpation by the Federal Government of the historic powers of the several States to control production of natural resources in relation to sound principles of conservation. The same recital could be made with an equal degree of truthful application with respect to the production or manufacture of practically every useful product or commodity. It is but a new pretext for an old and oft repeated assault on the reserved right of the States to regulate production of petroleum within their respective borders.

Likewise the recital that "the employment of methods and practices which are wasteful of petroleum and of the reservoir energy available for the recovery thereof burdens and obstructs interstate commerce and causes harmful diversion of such commerce" is a gratuitous declaration and offensive to plain, honest and direct intellectual processes when, by the very terms of the statute, such wasteful methods relate only to production and storage of petroleum and not transportation of petroleum in interstate commerce, which is (1) a conceded field of Federal regulation within out constitutional system, and (2) an occupied field of Federal regulation through the Connally Act and the act conferring jurisdiction on the Interstate Commerce Commission to regulate interstate pipe-line transportation.

The foregoing recitals merely constitute veritable confessions of the absence of plain and unmistakable Federal constitutional authority to legislate upon the subject matter of the bill and that the constitutionally reserved powers of the States must be wrested from them by Federal usurpation upon the basis of fact recitations that are founded only in legislative declaration.

The next three fact recitation in section 2 and which are numbered 3, 4, and 5, merely represent so much scenic language and really constitute impeachments of the prior recitations of claimed fact upon which they depend. They are very much like the elaborate detail with which an improbably tale is embellished in order that the probability of the details may obscure the manifest improbability of the critical and central fact that is the real criteria of the truth or falsity of the story so elaborately supported.

Subdivision (b) of section 2 repeats the rigmarole of subdivision (a). It is plain that the act is designed as a conservation measure for the regulation of the production of petroleum; and yet, lacking such Federal constitutional power, the seizure of this control must bear the false labels of (*a*) the maintenance of an adequate national defense, and (*b*) the regulation of interstate commerce.

This is neither a new nor a mild form of tyranny. The fact that sovereign States are sought to be stripped of constitutional powers by false fact recitals, instead of by a change in our constitutional system by direct constitutional amendment upon issues honestly presented for debate, deliberation and popular decision through the democratic procedures provided for in the constitution for its amendment, merely dramatizes the issue. To project such an assault upon American constitutional fundmentals upon such thin and unsubstantial factual bases is no compliment to the legislative bo judicial branches of this Government.

It is another striking exhibition of an over-all and powerful purpose to compel the constitutional framework of this Government to yield to the new philosophy of a Government-controlled industry and a Government-managed economy, whether or no.

Section 3 contains definitions and attention is called to the fact that the Commissioner is given power to define technical terms used in the act not inconsistent with the provisions of the act which is a grant of authority that should have close scrutiny and reconsideration for the reasons hereinafter set forth.

Section 4 creates the office of Petroleum Conservation. The Commissioner is not required to have any special or general qualifications for this enormoulsy important post except as contained in the Classification Act of 1923. The functions vested in him by the act shall be performed under the direction and control of the Secretary of the Interior who may likewise have neither special nor general qualification for this type of administrative genius insofar as the requirements of law are concerned. Such advantage as might attach to Presidential appointment is negatived by the act's requirement that the Commissioner's duties shall be performed under the direction and control of the Secretary of the Interior. The two associate commissioners are subject to the civil-service laws as well as the Classification Act of 1923 and they are appointed by the Secretary of the Interior and they perform assigned functions not prescribed and fixed rigidly in the act but only as assigned by the Commissioner and the Secretary.

All in all, this new bureau, the establishment of which, if lawful, will work a divestiture of established power and authority now possessed or exercised by the oil-producing States and the established regulatory bodies therein is a rather casual affair. After all of the dire recitals and implications with respect to national defense and obstruction of interstate commerce and the limitation of the usefulness of transportation facilities for such commerce and the abandonment thereof, etc., set forth in the "findings and declaration of policy," section 4 comes as a distinct anticlimax.

If all of the conditions verily exist, as recited, that warrant the denial of State power, and the assertion of superior Federal control, and this radical departure from historical and judicial constitutional interpretation, then this trivial set-up for the repose of such vastly important duties and powers is a palpable non sequitur. The net effect is simply to lengthen the arm of the Secretary of the Interior which is already a fairly long and multidexterous arm, already variously and exhaustively occupied with manifold governmental enterprises and occupations.

Section 5 of the act authorizes the investigation of the conditions of petroleum production in all fields within the United States to determine whether or not the methods and practices employed, and in operations precedent thereto and attendant thereon, are effective in preventing the avoidable physical waste of crude oil and the avoidable waste of reservoir energy available for the recovery of crude oil.

In this connection it is supremely important to observe that "avoidable physical waste" is not defined in section 3 wherein various definitions appear, but this phrase or term is left to the definition of the Commissioner.

The importance of this cannot be overemphasized.

It is a new phrase in conservation legislation.

It does not have appended thereto any limitation whatsoever such as the rule of reason, nor is it tempered by considerations of economic or technologic feasibility nor by any standard of good industrial practice nor measured by prevailing engineering standards.

The Commissioner's sole inquiry is: Are the methods and practices employed effective in preventing all avoidable physical waste of oil or waste of reserve energy?

If the determination be that such methods are ineffective in preventing all avoidable physical waste, then under section 6 the Commissioner, by executive fiat, issues his findings and his regulations which have the force of law.

This enormous delegation of legislative power conferred upon him is broad enough to encompass even whim and caprice because there is scarcely any operation (forgetting reasonableness, economic considerations, engineering standards, serviceable equipment, prevailing methods) which does not involve some conceivably avoidable waste if that is to be the sole statutory standard for the legal conduct of producing operations. In practically every instance the amount of waste theoretically or possibly avoidable would be inconsequential and would doubtless represent the utilization of such inconsequential waste for useful purpose, such as a propulsive or lifting agency, and yet such highly efficient and prudent operations would logically come within the denunciation of the Commissioner's findings and his regulations as the act does not contain any restraint or limitation upon the Commissioner in this respect

You will note in such sections 1 and 2 of subdivision B of section 5 that the definitions of physical waste of crude oil and waste of reservoir energy are not complete definitions but in each instance are "deemed to include" that part of the definition following.

This type of legislative draftsmanship permits other and additional definitions of "physical waste of crude oil" and "waste of reservoir energy" that may be entirely new departures from presently accepted scientific conceptions of the above-quoted phrases, and yet be not inconsistent with the partial definition incorporated in the statute.

It will thus be observed that the Commissioner is given the widest latitude of definition of these terms. I believe that the foregoing analysis is sound and if so, it is in flat contradiction of certain parts of the testimony of Mr. David Hudson, Assistant Solicitor, Department of the Interior, appearing in the published hearings of the proceedings held in Washington in November 1939.

For instance, Mr. Hudson testified in connection with section 5 (a):

1. That "the investigation and determination are to be carried out under a definite formula laid down by the Congress."

2. That "the determination as to whether or not waste occurs is to be made by applying to the facts brought out by the investigation the precise definitions of waste set out in section 5 (b)."

3. That "the Congress will thus have determined what constitutes physical waste of crude oil and waste of reservoir energy and the administrative inquiry will establish the facts which, in the particular field, do or do not come within the determination of Congress."

From the above quotations, and without a critical study of section 5 of the act (supported by a background of some actual experience in the oil industry), one would be induced to believe that the act did in fact prescribe a definite formula and precise definitions of waste and that the administrative inquiry had simply to establish the facts in relation to the definite formula and precise definitions.

I do not doubt that the solicitor was sincere in his statements above quoted, but I do not think that there can be any question but that he was grievously mistaken. I suggest that the test be applied by the committee itself to each of its members with reference to just one aspect of such "definite formula" and "precise definition" by asking themselves how they would measure with precision and definiteness, the operations of several hundred thousand oil wells, by the statutory standard expressed in the following taken from subsection 2 of section (b):

> waste of reservoir energy shall be deemed to include the use or dissipation of such energy, either as gas energy, hydrostatic energy, or other natural energy, at any time at a rate or in a manner which would result in the exhaustion of the energy available for the recovery of crude oil prior to the recovery of the ultimate quantity of crude oil which such energy would be or might be made effective in recovering or rendering recoverable.

The foregoing calls for just such an administrative adventure, in an illimitable field of conjecture, as anyone would care to make with respect to each, any or every oil well in each, any or every field, at any time, and at any variable rate of production, in past, present or future operations, in relation to a problematical future ultimate oil recovery in which the principal data of estimation rests largely in the field of speculation.

Bear in mind that the above, according to Assistant Solicitor Hudson, is the major portion of the alleged precise definition of waste of reservoir energy.

Assistant Solicitor Hudson also stated, "section 5 (c) enumerates the several characteristics of petroleum deposits and conditions of production therefrom which the commissioner is directed to consider in such an investigation" but the solicitor omitted to mention that the last subdivision 10 of subsection 5 (c) provides that the commissioner shall consider "other characteristics and conditions of the source of supply and production therefrom" which leaves no restraint whatsoever upon the Commissioner in attributing avoidable waste to other and different causes and characteristics in any field or in any part thereof, not set forth in the statute.

I think the committee would be aided, in testing the clarity, the feasibility, and the workability of this act, if the committee should ask itself, and then endeavor to put down in black and white, what importance the Commissioner is required by statute to attribute to "the porosity, the permeability, and other characteristics of the deposit or deposits" in determining whether there has been avoidable physical waste of crude oil and avoidable waste of reservoir energy. (The committee will understand that porosity and permeability may vary greatly in different parts of the same producing horizon and again in different producing horizons in the same field.) With necessary repetition, the committee could profitably apply to itself a similar test with respect to the other nine subdivisions of subsection (c) of section 5 which enumerate different categories of information which the Commissioner is enjoined to consider, without specifying as to any one of them, the weight which he should attributes each single item of information or the weighted value to be attributed to these different items of informatino when used in combination. This is called to the particular and especial attention of the committee so that it will realize that this elaborate diagram of what the Commissioner shall consider is neither strait jacket, nor brass collar, nor indeed, any restraining influence upon the Commissioner, as far as statutory inhibition is concerned, when he elects to make a determination that there is avoidable physical waste of crude oil or avoidable waste of reservoir energy and elects to prescribe his regulations with respect thereto.

Under this delegation of authority the Commissioner writes the law, investigates the practices in actual operations, pronounces judgment, prescribes regulations and conditions, with himself executing their enforcement, and the substantial availability for the judicial review of such administrative action is substantially nil.

Section 6 of the bill is upon the subject of "Findings and Regulations." It provides for the investigation by the Commissioner of various fields to ascertain whether the methods and practices employed therein are effective in preventing avoidable waste. It provides that the Commissioner shall issue his findings where such methods are found to be effective, provided "He shall have no reason to believe that methods or practices which will result in avoidable waste are about to be employed." This is indeed strange doctrine. The Commissioner is given jurisdiction not only over actual existing conditions, but also over possible and prospective and futuristic conditions. This is a very dangerous grant of authority particularly with reference to the many hundreds of oil fields, and the hundreds of thousands of oil wells, that are under existing regulation by competent State authorities under valid State laws where changes in operating conditions are being made from time to time pursuant to orders emanating from periodical hearings held by such regulatory authorities after due notice to all interested parties. In this connection it is well to note that Assistant Solicitor David Hudson has pointed out that the act "Does not extend to the participation of Federal officials in the conduct of State proceedings."

The Commissioner might unwisely, unjudiciously or coercively make findings and prescribe regulations concerning the "Methods or practices which are about to be employed which will result, in his opinion, in avoidable waste," in advance of such hearings by State authorities with the purpose and design of limiting and controlling their judicial discretion.

The provision of the act above referred to can and will most certainly become a great source of friction instead of cooperation.

When the Commissioner finds that existing methods and practices in the field, or those methods and practices which he believes are about to be employed, are not effective in preventing avoidable waste, he issues his findings of fact and by regulation designates and defines with particularity those methods and practices which he finds to be wasteful. There are 11 factors of waste enumerated and 3 factors which are described as "prima facie evidence of avoidable waste."

Assistant Solicitor Hudson has testified as follows with reference to the provision of section 6:

> The enumeration of those factors of waste by Congress, together with the definitions of waste set out in section 5 (b), so informs persons affected by the bill as to enable them, in many instances, to evaluate the conditions of operation with which they are concerned and to take such corrective measures as will make unnecessary the promulgation of regulations authorized in the bill.

In my judgment the above quoted statement and conclusions are in error, for the following reasons, among others:

First. I have previously pointed out that avoidable waste is not defined in this bill.

Second. The factors of waste that are enumerated do not limit the Commissioner because the statute provides that these are factors of waste "among others" and the Commissioner has unlimited discretion with respect to other claimed factors of waste.

Third. Section 6 merely provides that the Commissioner shall consider and make proper provision concerning factors of waste enumerated, but he is no way limited or circumscribed by the existing status and condition in the various wells and fields and the laws, orders and regulations effective therein under State authority, nor is he in anyway bound to respect conflicting opinion or conflicting authority as to either methods or practices in vogue or in prospect. He may consider practices "in prospect."

Fourth. There is no way to anticipate or to correct an existing spacing pattern as to completed or drilling wells or offset requirements even though the Federal Commissioner might disagree with the State authorities or with the operators, or with the requirements of lease contracts.

Fifth. Where State regulations permit the operation of certain wells within the limits of a fixed gas-oil ratio, the contrary regulation by the Federal Commissioner based on his own judgment as to the inefficiency thereof, would be an intolerable and unworkable interference.

Sixth. The Federal Commissioner's judgment as to the inefficient, excessive or improper use of reservoir energy in developing oil fields being operated consistent with State regulations and rules, would present, in most cases, hopeless confusion.

Seventh. The Commissioner's judgment as to what constitutes the excessive production of natural gas in conjunction with crude oil from a source of supply containing both, where the natural gas was used or the generation of light, heat, or power, or for other purposes, under State rules and regulations, if in conflict with State regulatory authorities, would present intolerable and unworkable administrative interference.

The above reasons are, in my judgment, very practical and realistic matters which throw serious doubt upon the solicitor's opinion previously quoted. Indeed, they present a complete refutation.

Section 6 (c) (2) provides that the Commissioner shall consider to be prima facie evidence of avoidable waste:

> The production of crude oil from any flowing well in any field at a rate which, in its relationship to the known crude-oil reserves of said well or field, is substantially in excess of the rate of production in relationship to reserves in other fields in which the Commissioner has found, under subsection (a) of Section 6 of this Act, that the methods and practices therein employed are effective in preventing avoidable waste. This is a monstrous provision.

To begin with, from the time that the Commissioner approves an operation in a particular field, he, in effect, sets up a standard or measuring rod as against which to apply the above quoted provision.

Everyone knows that, throughout the United States, there are variable rates of flow in relation to the crude oil reserves of a well or field. There is no definition of what constitutes the crude oil reserves of a well and even if such could be definitely described, there would always exist legitimate differences of opinion as to the facts of the reserves of a particular well. Likewise the reserves of a particular field are progressively estimated and recomputed from time to time as development proceeds and the productive areas and horizons are better established and delineated. The above quoted prima facie evidence of avoidable waste is utterly hopeless as a rational and enforceable administrative criteria.

As field after field is found to be nonwasteful each would automatically become a standard under 6 (c) (2) and each would be in conflict and at variance for the purpose of the test to be applied in section 6 (c) (2).

In connection with the above-quoted provision, Assistant Solicitor Hudson makes the following statement:

> The second case is the production of crude oil from any flowing well at a rate which in relation to the known reserves is substantially in excess of the production rate in relation to known reserves in other fields where the Commissioner has already found operations to be nonwasteful. These two situations are in the nature of emergency provisions which will permit the Commissioner to promulgate suitable regulations to avoid irreparable waste occurring at a relatively rapid rate pending a definite determination of the effect of such production. Final regulations are to be based on the results of the investigation upon its completiton, as in the case of any other field.
>
> That section 6 (c) (2) does not contemplate that the same relationship between the production and reserves is to be established as a continuing requirement. As I have indicated, paragraph 2 is in the nature of an emergency provision which would permit the Commissioner, upon finding a field where the production rate in relation to the reserves was as you have stated, substantially in excess of the same relationship in other fields as to which investigation had been made under the bill, to promulgate such suitable regulation as may be necessary until the actual facts are determined with relation to the definition of waste in the bill; and at that time this ceases to be a standard and the definition laid down by the Congress is the standard for the final regulation.

Mr. COLE. Mr. Hill, if I may interrupt you at this point. The House is taking up a very important bill this afternoon and the Members want to be on the floor to hear the discussion. Unless you want to finish your paper at this time, I think we will resume at 2 o'clock.

Mr. HILL. I will be happy to comply with the wishes of the chairman.

Mr. Cole. You can be here this afternoon?

Mr. Hill. Yes, sir.

Mr. Cole. Well, suppose we stop at this juncture, and we will go again at 2 o'clock.

(Thereupon, at 12:12 p. m., the committee took a recess until 2 o'clock of the same day.)

AFTERNOON SESSION

The committee reconvened, pursuant to the taking of recess, at 2 p. m., Hon. William P. Cole, Jr., presiding.

Mr. Cole. The committee will please be in order. All right, Mr. Hill, you may resume your statement.

STATEMENT OF GEORGE A. HILL, JR.—Resumed

Mr. Hill. Mr. Chairman, just before adjournment I quoted from the testimony of Assistant Solicitor Hudson in which he said that the second section of the bill was in the nature of an emergency provision and that that would be disposed of when the Commission made a more detailed investigation.

In my judgment the opinion above quoted is wholly untenable. There is nothing in the statute declaring it to be "in the nature of an emergency provision."

There is nothing in the statute concerning the promulgation by the Commissioner of suitable regulations to avoid irreparable waste occurring at a relatively rapid rate. There is nothing about the promulgation of regulations pending a definite determination. There is nothing about final regulations to be based on results of investigation upon its completion. There is nothing about this section ceasing to be a standard at any time.

All of the foregoing strange and external matters of purpose and intent doubtless existed in the mind of the draftsman of the bill, and doubtless color the interpretation of Assistant Solicitor Hudson, but there is absolutely no basis or warrant in the bill itself for the interpretation given by the Assistant Solicitor as hereinbefore quoted.

Section 6 (c) (3) is another prima facie evidence of avoidable waste and is as follows:

> Subsequent to one year after the effective date of this Act, the production of crude oil or natural gas, or both, from any field subject to investigation under this Act, without the concurrent and reasonably accurate determination, by the producers in said field, of the factors listed in subsection (c) of section 5 of this Act as applied to said field.

As a practical matter this is an irrational and unreasonable provision that cannot logically have any relationship to the existence or nonexistence of avoidable waste. The crux of the matter is whether or not the producers in a field within 12 months after discovery have all concurrently and accurately determined certain factors. This is an attempt at statutory intellectual compulsion, that is a new departure in legislation. It would be a strange and abnormal situation if all of the producers in a field could in the exercise of an honest and normally intellectual process, agree concerning all of these factors after several years following the discovery of a field of any importance. However, whether such operators agree or disagree in their fact determinations would have no conceivable bearing upon the prima facie existence of avoidable physical waste.

The Assistant Solicitor's explanation of the reason for the inclusion of the above-quoted provision and his interpretation of it is as follows:

> The third prima facie case of waste is the failure, subsequent to one year after the effective date of the act, of the producers in a field to determine with reasonable accuracy the factors of waste listed in section 5 (c) as applied to the field. This case is set up in lieu of an express provision directing the continued and reasonably accurate determination of the factors which the Congress has enumerated as factors of waste. Its justification as a prima facie case lies in the fact that without a determination, such as is required, it cannot be known whether or not waste exists, and the strong probability is that it is present.

The reasoning above employed is that, if all of the operators within a year after discovery are not in agreement as to a large number of factors, it is probable that there is waste, and hence it shall be declared to exist prima facie. Presumably the Commissioner would declare this to be a fact and the ensuing regulation would require the operators to cease their operations until they were in complete accord on the facts specified in subsection (c) of section 5 of the act. This is arrant nonsense. The mental accord of its citizens is not the legitimate concern of government, nor a proper subject matter of legislation, not does it bear rational relationship to "physical waste of oil."

Section 7 deals with voluntary agreements among the operators in a field in which the Commissioner has issued findings of fact in relation to the elimination of avoidable waste. Assistant Solicitor Hudson has testified that this section vests absolutely in the Commissioner the right to determine the effectiveness of any voluntary agreement which the operators themselves might make and that if the Commissioner disapproves of such agreement, wisely or erroneously, there is no recourse from his decision or administrative or judicial review available and that his decision in such respect is final. It would thereby appear that the "voluntary nature of the agreement is an inaccurate definition."

Section 9 is as follows:

> It shall be unlawful for any person, during the effective period of any applicable regulation promulgated under the authority of section 6, section 7, or section 8 of this Act, to employ any method or practice designated and defined in such regulation as wasteful.

The Commissioner's fiat as to what constitutes waste, in the above section, becomes law, the violation of which is punishable under this act notwithstanding the fact that what the Commissioner denounces as wasteful may be declared by State law and regulation to be nonwasteful and which may represent a method and practice under and by which a field has been developed throughout many years of operation and with an expenditure of many millions of dollars. This represents a grant by the Congress of law-making power that could be most destructively and tyrannically employed and transfers to a subordinate of the Secretary of the Interior powers not possessed by all of the State regulatory commissions and officers together. The operator is placed in the wholly untenable position of being authorized to operate by a State authority and denied the right to operate by a Federal authority with public law, penalties, and civil liabilities plaguing his course, irrespective of the course that he pursues.

Section 10 of the act empowers the Commissioner to conduct "experimentation, investigation, or demonstration relating to the application of engineering, chemistry, or economics to various aspects of the oil and gas business, and the transfer of existing agencies, such as the

Bureau of Mines, to the Commissioner's office." The continuance of existing research and experimentation, scientific as well as statistical, is admirable whether existing Federal facilities should be transferred around or merged is yet another question. Perhaps greater research activities, supported by more adequate appropriations and additional scientific personnel, for the existing agencies would be more nearly in accordance with the thoughtful and nearly unanimous opinion of the oil industry itself, the State regulatory bodies, and the men of science presently in the Federal Government employ.

Section 11 relates to alleged cooperation and joint action, but the members of this committee, by their previous cross-examination of Assistant Solicitor Hudson, have already elicited the admission, in various forms, that cooperation is scarcely the word, the purpose, or the intent, and that every State law, rule or regulation, no matter how long in force or how uniformly or obediently complied with by an operator, must yield to and succumb before the superior and paramount regulation of the Commissioner, and if the Commissioner's regulation is violated by an operator by compliance with existing State law and authority, the operator is guilty of violating Federal law with criminal and civil penalties, accruing. The Greeks have a word for it and it is not "cooperation."

Section 12 relates to penalties, civil and criminal, money and jail, principals and actual or theoretical remote controllers, all adequately designed to create that degree of persuasiveness so helpful in effectuating that "cooperation" between Federal and State agencies expressed in section 11. The more drastic the penalty, the greater the accentuation of the chaos and confusion that would ensue from the conflict of State and Federal regulation, especially since the uninterrupted conduct of this great industry cannot await the solution and composition of an administrative row. And in this connection, it may be safely taken as settled fact that the imposition of this super-control upon State authorities will unquestionably experience as high degree of resistance. It will result from this proposed forceful domination as distinguished from the advisory cooperation now being amicably, lawfully, and effectively experienced. The field of "advisory cooperation" is far from exhausted and is no more limited than the opportunity for intellectual inquiry and research in the domain of science.

Section 13 is entitled "Investigations and Injunctions." Upon suspicion of an actual or intended violation of the Act or any order, the Commissioner may require any person to file a statement under oath in response to such questions or inquiries the Commissioner may propound about the matter or matters to be investigated. Nothing is said about immunity. The filing of the written answers is mandatory. It relates not only to past and present but also to future intended actions. And the Commissioner is authorized to enjoin "future" actions or intended or supposedly intended actions, and he may initiate his suit in the District of Columbia. This provision of optional venue in the District of Columbia alone is sufficiently tyrannical and oppressive to condemn the purpose and intent of such measure. Not only is the venue laid optionally in the District of Columbia for restraining orders but also for writs of mandamus, compelling affirmative action in compliance with the Commissioner's orders. These are the distinguishing marks in the framework of the administrative despotism that is being set up to compel, by court decree, a subservience of State regulation and to utilize the factors of cost, time, and distance to break down the resistance to legal compulsion and to limit the practical availability of judicial review of administrative edict.

Section 14 gives "jurisdiction of suits and offenses" to United States district courts generally and to the United States District Court for the District of Columbia. Suit may be brought in the district where the violation occurred or in the District of Columbia. Plainly, the granting of jurisdiction to the United States District Court in the District of Columbia is the "axe" in the statute. Convenience will be the reason assigned. The real reasons, and their obviously repellent nature, do not require elaboration or explanation.

Section 15 provides for star-chamber hearings, on 5-day notices of complaint, which the Commissioner may change at will after summons, and at any time, even after the hearing, as long as it is "prior to the issuance of an order based thereon." The Commissioner can summon a resident of Los Angeles to Washington, or to Bangor, Maine, if he wishes. As the complaint can be changed, he has no real notice of the offense charged, and, of course, cannot be prepared. The whole proceeding is summary, arbitrary, obviously oppressive and offensive to all the ordinary sanctions of fairness and of judicial impartiality and procedure security and rectitude. The crowning indignity is the solemn provision that "the rules of evidence prevailing in courts of law or equity shall not be controlling." The unholy curse of this provision is revealed in the follow-through, wherein it is provided that, when judicial review of the Commissioner's findings as to the facts, if supported by substantial evidence, shall be conclusive. This conclusiveness as to the facts on the appellate court is to be made mandatory, notwithstanding that the greatly overwhelming and preponderating and legally qualified and primary evidence, secured under legal rules of evidence, may be in conflict with such "substantial" although quantitatively and qualitatively, inferior evidence can be found in the record to support the Commissioner's fact findings. All of the foregoing provokes the inquiry.

What manner of superman is this Commissioner guaranteed to be, whose inerrancy must be so jealously safeguarded as to circumscribe and limit, by express statutory provision, the ordinary judicial discretion of our higher Federal judiciary in the realm of appellate judicial review in order to give the finality and rigidity of law to the fact-findings of a subordinate administrative functionary?

Is all of this seriously proposed in serving the ends of justice for a free people in a system of government of, by and for the people?

Sections 15, 16, and 17 of the act are practically parallel with like provisions in the National Labor Relations Act. A congressional committee is now engaged in an investigation of such act and its administrative operations. It constitutes an investigation of the investigators. The facts being developed are most revealing, and their pertinency to this investigation is respectfully suggested.

The Council on Petroleum Conservation is provided for in section 18. The Council is without power, and so the provisions therefor are mere scenic background for the office created for the Commissioner of Petroleum Conservation—an administrative subordinate of the Secretary of the Interior. Such a council, created in a different legislative atmosphere, and devoted to scientific ends with no assertion of inherent power save the force of pure and unsullied reason, could doubtless be of service to the Nation, the sovereign States, and the free and unterrified citizenship of this country.

This country has not become great, nor has it preserved its greatness, by the imposition of powerful government direction and control. The intelligence, the energy and capacity, the patriotic and spiritual qualities of a versatile people, operating within the constitutional framework of a democratic government in which free institutions are safeguarded in an inviolable bill of human rights, have made these United States of America the greatest achievement in free government in the history of civilization, and the American people are, in my judgment, still unwilling to commit their destiny to a government dictated by masterful men in substitution for a constitutional representative democracy of free and sovereign people.

I thank you for your courtesy and your patience in hearing me.

Mr. Cole. Mr. Hill, I want to ask you a question or two.

I gather from your paper that there is, in your opinion, no authority whatsoever for the Federal Government to participate in the regulation of our petroleum production.

Mr. Hill. Yes, sir; that is by the imposition of force.

The Chairman. Does that mean that we cannot conceive of any situation that might develop within the States pertaining to the production of our petroleum resources which would justify Federal action?

Mr. Hill. No, sir; that is not the case. I think that the Federal Government is now engaged in the indirect control of production. Control is not the proper word; but I think for instance the functions of the Bureau of Mines have had a very healthy and splendid effect upon the whole production picture in this country; that they have performed a very helpful advisory service. I think that the Connally Act has been a most helpful bit of legislation. I think that the action of Congress in authorizing the interstate compact has been helpful. I think that the Interstate Commerce Commission in its regulation of rates, its control over interstate and foreign pipe-line carriers, in rate making, has been effective. I think that the scientific work done by the Bureau of Mines and the Bureau of Standards and other governmental agencies is helpful in the field of scientific inquiry, and the application of those principles that are learned from time to time from such research to the practical operation of the business.

Mr. Cole. In what way is the work of the Bureau of Mines in forecasting demands connected with the industry?

Mr. Hill. The Bureau of Mines has been forecasting as to the consumer demand. Those figures are being currently furnished to the State regulatory bodies which sit in a quasi-judicial capacity to pass upon what the periodical market demand requirements are. The evidence which they hear is weighed along with the evidence represented by the findings of the Bureau of Mines. The experience in the past, of those forecasts, when compared to the subsequent actual consumption requirements has proved to be a very reliable measuring rod in the efforts of the regulatory bodies to carry out the mandates of their State market demand and conservation statutes.

Mr. Cole. Pretty uniformly, the States have followed their estimates?

Mr. Hill. Yes, sir.

Mr. Cole. What are you going to do when a situation develops, where one of the major producing States pays no attention to such forecasts and produces far in excess of what the Bureau of Mines estimates to be the requirements?

Mr. Hill. Mr. Chairman, we cannot expect rapid educational processes in a State where the problems of overproduction are unknown to the people and to its oil operators.

We have found in the past through experience that an enlightened public sentiment is soon developed and that, measured by reasonable periods of time, the State that has, perhaps abused for a time its resources gradually becomes educated and informed, then it sets up a body of oil conservation legislation and an administrative body, and the support of that law then has the sanction of the public, and fine enforcement results.

Mr. Cole. How long do you think, Mr. Hill, the individual producers who are restricted in their production and the leaseholders and royalty owners are going to tolerate a condition of the kind in a State such as we both have in mind?

Mr. Hill. Sometimes it takes 2 or 3 years, Mr. Chairman, and that is the thing that is most hurtful to those of us in the industry. We do not like the inconvenience and the cost of it.

Mr. Cole. I beg your pardon.

Mr. Hill. I say that we suffer more.

Mr. Cole. Now, you say 2 or 3 years.

Mr. Hill. And as I say, we suffer more than the public generally. But, that estimate may be too long, but——

Mr. Cole (interposing). You know so much more about all phases of this matter than I do, that I rather hesitate to say this, but I imagine it is easy to prophesy that if Illinois continues at the rate she is going, at the end of 3 years many will be back here asking for something to be done.

Mr. Hill. Mr. Chairman, another witness will cover the physical waste phase of that State; but I think that the committee will be satisfied after the full evidence is presented, that the present conditions there could not continue for a long period of time, and that the estimate which I have made is too long.

Mr. Cole. What do you mean by that, Mr. Hill, that it could not continue for a long period of time?

Mr. Hill. I mean that the decline in the production would be so rapid that a period of prolonged wastefulness under the physical facts of the case could not be long continued.

Mr. Cole. You mean that they are producing far in excess of what they should?

Mr. Hill. Yes, sir; and that both the physical and economic factors will be applied as correctives, apart from any legislation that might be enacted, and any administrative body to enforce it, and that within a period of 2 or 3 years is a very radical estimate as to time. I have stated that as the length of time on the outside, as the outside limit. I would expect a much earlier correction, whether by law or by force of economic circumstances, or by voluntary action.

Mr. Cole. Well, when they start to open up old pipe lines in Illinois to the Atlantic seacoast, it looks like they think it is going to last for some time.

Mr. Hill. None of us can tell what the estimate is in relation to volume. It might be that the pipe-line route is a regularized channel and is more of a contributing factor to stability than the disposition of excess production by railroad carriers or trucks.

Mr. Cole. Then, as I understand, so far as the Texas crude is concerned, you are willing to tolerate this unregulated and uncontrolled production in Illinois, regardless of the markets they are taking from your State on the Atlantic Coast Line, just as long as they see fit to permit that to be done.

Mr. Hill. Mr. Chairman, I would not express it that way.

Mr. Cole. Maybe I have expressed it a little too strongly. You know what I mean.

I read over the week end for instance a statement which I have before me from the Oil and Gas Journal of February 15, an item dated Springfield, Ill.:

> Gov. Alf Landon predicted that if Illinois and California continue to stay out of the interstate compact, Federal control of the oil industry was inevitable—

and added that the chief argument for Federal control is that Illinois and California have not joined the compact.

Then I find another article in the Herald Tribune of New York, a lengthy, very interesting article, as to the shipping problem, entitled "Illinois Oil Trade Route," which is a lengthy statement covering the figures mentioned above, and stating that the Illinois crude to New Jersey refineries by one shipper had increased from July to the present figures. Another shipper was planning to reopen the old trunkline pipe-line system and says that the present daily movement of 30,000 barrels of Illinois crude to Pennsylvania refineries is likely to be increased. And, that is the competitive set-up with your Texas crude. All of that leads up to the final deduction of the condition of which we are speaking, and with Illinois nearly up to 400,000 barrels a day, without any control, gentlemen tell us here that the industry as a whole, the country as a whole, is willing to tolerate such condition, but I am wondering whether we are not going to be met with something like we had in 1934 when the East Texas problem was before us. Texas was not able to control the situation at that time without subsequent help from the Federal Government.

Mr. Hill. Tolerance is not the word, because those of us who are suffering from the competition of that condition are just as active in trying to improve it, by all legal means that are available to us, as we can possibly be, and that is going on from day to day, and I think great headway has been accomplished although the results are not now manifest. You will find a changed attitude of a number of operators there, and there has developed a body of sentiment in favor of State regulation, that is quite respectable, and that may be exerted in a successful way before very many months have passed.

Now, from time to time various sections of the industry, that is, geogrphhic sections, have been guilty of excesses that were happening along the lines of their development of conservation laws and the better regulation of the industry; but it is out of those experiences that we have developed the great body of laws that are quite uniform and no other private industry, in my judgment, in the United States, has made a more marked advance than this great industry has.

Nor has any other industry, in my judgment, performed a greater public service; but it has cost us all dear from time to time as we have made this forward progress.

Now, after all, in a democracy, we cannot expect things to happen with the rapidity that would come from a dictatorship; but we are willing to pay that cost in order to serve an end, to wit, the saving of our priceless heritage of liberty, which we prize more than we do the savings of a small quantity of petroleum, and we do not stand tolerantly by, or obediently by, when Illinois takes its time; but we know from our own experience that we have all had derelictions in Texas, in Oklahoma, and in Louisiana, and Arkansas, as we came along the route to which we have now progressed.

So, we are not tolerant; but we are hopeful and we are confident, and we would not trade our present condition for an altered form of Government.

Mr. COLE. I would not expect you would go as far as a witness did the other day who said that he would rather see all of the oil in this country—I do not know whether this is a fair statement or not—but as I recall the statement, he said that rather than have any Federal legislation of this character, admitting that there was waste prevalent in many of the fields in America rather than have any Federal action to control the situation which the States could not, assuming that is conceded; he would prefer to have no oil.

Mr. HILL. Mr. Chairman, I can express it this way: While I am nominally appearing here as a representative of the oil industry, I feel very deeply the fact that I appear here as a simple American citizen, the father of three children, whose destiny and whose opportunity to me outweigh everything that could pertain to the welfare of the oil industry, and as a matter of principle, I would rather see free American institutions preserved than to guarantee forever the prosperity of the oil industry, and I think that that is the feeling that all of the witnesses that will appear before you in behalf of the industry have, that their appearances for the industry is secondary; that their appearance in behalf of a perpetuation of the right to continue our own free American institutions is paramount.

Mr. COLE. Of course, the prosperity of the industry that you refer to is one thing; but this industry went along for many years until suddenly in 1934, when the main producing States very freely admitted that they could not control the situation and called upon the power of the Federal Government we went in and passed the Connally Act. Year by year, and I think even more so now, because of the world situation, there is necessity for Government activity, Government concern, realizing that in time of war and in time of peace we are so dependent upon our petroleum resources, and the use of petroleum. I doubt whether it is fair to say that the Federal Government should not be permitted to take any great interest in how this resource is being handled except as you have outlined here today, through the Connally Act, the Bureau of Mines, which is without any legal sanction whatsoever, merely a voluntary matter on the part of the Bureau, and one or two other Government activities. I look upon such activities myself as a State's rights man, as I have always prided myself in being. The literature and information coming to me suggests on the part of some of our main producing areas, very gross indifference as to the interest of the Government as a whole, and in view of that, I think there is something we can do about it. Just how far we should go, I am not sure.

You are a member, Mr. Hill, of the American Petroleum Institute?

Mr. HILL. Yes, sir.

Mr. COLE. You are a member of the board?

Mr. HILL. Yes, sir.

Mr. COLE. You are a member of the Independent Petroleum Association?

Mr. HILL. Yes, sir.

Mr. COLE. Did you favor the shut-down action of the States last August, curtailing or stopping practically all production in this country?

Mr. HILL. Well, Mr. Chairman, I happened to be in the Republic of Mexico for the month of August and I had neither voice nor participation in the action. I believe if I had been a member of one of the State regulatory commissions, I probably would have met the emergency—if there was an emergency—in a different way.

Mr. COLE. In fact, you participated in a recommendation prior to August 1939 in direct opposition to any such action, did you not?

Mr. HILL. Well, I do not recall to what the Chairman has reference. I would like to have him refresh my memory.

Mr. COLE. I mean a committee of the Independent Association of which you are a member——

Mr. HILL. Yes.

Mr. COLE. You are a member of a committee which recommended very definitely against such action on the part of the States?

Mr. HILL. I have no recollection of that, Mr. Chairman. What is the date of that?

Mr. COLE. Let me see if I can put my hands on it.

Mr. HILL. I did not know that the August shut-down was intended, and that is why I do not recall any action advising against it.

Mr. COLE. Maybe I am wrong about it. Let me see. In October of 1938, at Tulsa, Okla., you were appointed one of a committee of 36.

Mr. HILL. Yes, sir.

Mr. COLE. Of the Independent Petroleum Association of America?

Mr. HILL. Yes, sir.

Mr. COLE. That committee recommended, at Fort Worth, Tex., on November 11 in a long report, in part, dealing with subject D, assigned to the committee for study, that there was no need for shut-down; question D, considering proposed total shut-down in all oil-producing States having regulatory bodies. Your report reads:

> We believe there is no immediate necessity and there is doubtful legal basis on which to found such action.

Mr. HILL. Yes, sir.

Mr. COLE. I do not know whether all of these gentlemen participated in that or not.

Mr. HILL. Yes, sir; they all did participate, and I participated, and I joined in that report.

Mr. COLE. All right. All of the committee of 36, Mr. Hill, did likewise?

Mr. HILL. Yes, sir; that is in the last part of 1938. I thought the chairman had some reference to an action taken about the time of the shut-down in August 1939 and I had no recollection of it.

Mr. COLE. Yes. I had reports of that decision in August, and then as a basis as to how you looked upon such action, I asked you about your previous service on the committee which studied that very matter, and made a recommendation on the subject to which I refer.

Mr. HILL. Yes, sir; I heartily concurred in that recommendation and every part of the recommendation of the committee of 36.

Mr. COLE. Of course, the report of the committee was later adopted; the report to which I refer, was adopted at the meeting of the Independent Petroleum Association of America at Dallas, Tex., June 6, 1939; just a couple of months before the action of August. That is, your work as a committee was passed on by the association as late as June, 1939, and I think approved by the association. Am I right about that?

Mr. HILL. I do not remember the date, Mr. Chairman, but I did not attend the June meeting, because I was up here before the S. E. C. on some financial matters. I did not attend those meetings.

Mr. COLE. Is it correct, Mr. Hill, that the action of the States in curtailing production in August 1939 was against the advice of the Independent Petroleum Association?

Mr. HILL. I am sorry, I cannot answer; I could not answer for that. I have heard a lot of discussion of it, but for the entire month of August 1939 I was in the city of Mexico City and trying to get away from this sort of thing for a little while.

Mr. COLE. All right, sir.

Mr. PEARSON. May I ask a question?

Mr. COLE. Mr. Pearson.

Mr. PEARSON. Mr. Hill, do you think that the Federal Government has a right to control the navigable streams in this country?

Mr. HILL. Yes, sir.

Mr. PEARSON. As against the claimed rights of the riparian land owners?

Mr. HILL. Well, I have not made a study of everything that would be involved in riparian rights of land owners; but certainly within the field of navigation, the paramount authority of the Federal Government is, and should be, above anything else that would interfere or obstruct.

Mr. PEARSON. Do you think that the Federal Government is exercising a proper function involving, in a measure, the operation of the railway system of the country?

Mr. HILL. I think that you raise a question that is subject to grave differences of opinion.

Mr. PEARSON. Well, I am asking for your opinion.

Mr. HILL. Well, I do not feel that I am competent to express a profound opinion; but for whatever it is worth, I think perhaps the Federal Government has prevented the railways of America from exercising an initiative and enterprise that would have improved the situation.

Mr. PEARSON. Do you think that the Federal Government has a right to control the airways of the country, prescribe the regulations for the use of them?

Mr. HILL. I do.

Mr. PEARSON. Well, is there not a strong analogy to be drawn between the control of a natural resource such as oil and gas, which are migratory in their nature, and in which no man can have a vested interest because of their migratory qualities, and the control by the Federal Government over navigable streams, the railway systems, and the airways, in the public interest.

Mr. Hill. No, sir. I think that the analogy would be more correctly stated and more logically stated if the question were asked in this manner: Should the Federal Government have the right to control the growing of timber and the raising of hemp, and the mining of iron ore, and the other things that are used in the fabrication of an airplane; trying to contrast that with the right to control the production of oil. I think that the parallel is the right to control the interstate and foreign transportation of petroleum and its production and the control of the airways and the control of navigable streams.

Mr. Pearson. Well, the controlling of a growing product would not be an analogous situation, because there you have a vested title in the owner of the property and a fixed product produced by his toil; but in this case you have a product which may be under your land today, and under mine tomorrow, because of the very nature of it, if I understand the technical aspects of it. As I understand it is migratory, and it goes from one place to another, and in addition the oil and gas supply of the country is now of such widespread use, not only from the standpoint of individuals and private consumption, but also public, and incidentally is an irreplaceable product. The thought occurs to me that maybe you are just a little bit too much exercised over the loss of liberty or freedom in the operation of a business which in the very nature of it partakes strongly of a public utility, something in which the general welfare of all of the people is vitally connected and not prejudging the case at all, but looking at it from that standpoint, I was just wondering since our governmental activities have for years been controlling our transportation facilities for instance, and other things, which are not strictly speaking natural resources, but which belong to the public and must be dealt with as public institutions, if we are going very far afield in expecting the Federal Government to take some hand in controlling this great natural resource.

Mr. Hill. Well now, sir, in the first place I cannot grant the concession that petroleum is affected with a public interest such as a public utility nor anything that alters the nature of private ownership; nor that the migration of petroleum even approaches the migratory qualities of the upper topsoil of land. We have more land blown away, in the topsoil, than we ever have oil to migrate through the sands.

Mr. Pearson. That is due to our own negligence too, is it not, Mr. Hill?

Mr. Hill. If we do not reduce it to possession I do not see why it is the concern of the Government.

Gentlemen, I believe that if you would reduce to a percentage basis, the consumption by our Army and Navy of petroleum and its products, as compared to that which is used in other commercial activities from day to day, and then translate that into terms of percentages of our proven reserves, it will be quite apparent that the sponsors of this bill, either because they are uninformed, or for other reasons, have tremendously magnified the importance of military and naval requirements.

Now, if it were a matter of grave public concern, we would find more clamor from the Army and the Navy for the protection of our foreign holdings of petroleum. We would not find an apparent attitude of indifference to the expropriation of foreign-oil properties owned by American citizens. The thing does not have the same gravity in each Department of the Government that is ascribed to it in these hearings. The Interior Department is in a lather over what is going to happen to the Army and Navy, but the State Department does not express like concern as to Mexico, Bolivia, and other parts of this hemisphere.

Mr. PEARSON. That is all, Mr. Chairman.

Mr. COLE. Any further questions?

Mr. CROSSER. Let me ask one question. Mr. Hill, do you have any objection to having the Federal Government undertake the prevention of actual physical waste as distinguished from control looking to the regulation of price?

Mr. HILL. Yes, sir; I have a fundamental objection that we already have a Government contending that it has the constitutional power to regulate production and it is exercising actively that regulatory power at this time. Therefore, as an operator, I do not want to be subjected, in my operations, to conflicting authority. I want to know where the authority is that I must be obedient to.

I have had a slight advantage in the oil business in relation to the application and administration of laws for the reason that I practiced law far in excess of 20 years and I know the tremendous difficulties that are involved in carrying administrative action through from basic laws.

There are nice distinctions that can be legitimately made with honest differences of opinion all of the way down the line; but this is a business that requires action, because an oil well or a gas well, in production, will not wait the ironing out of contending factions and conflicting authority.

So, forgetting the question of the existence or nonexistence of Federal power to control production——

Mr. CROSSER. I am not raising that question.

Mr. HILL. But, when you have got an actual conflict between existing authority and one that seeks to come in——

Mr. CROSSER (interposing). Mr. Hill, suppose that none of the States had already exercised any such authority, what would you say then?

Mr. HILL. I would still say that the act of production is not commerce and certainly not interstate commerce, and certainly not within the purview of Federal jurisdiction.

Mr. CROSSER. I understand the legal position very well. I am not disputing your contention in that respect. I am talking from the standpoint of what might be political science, or political ethics, if we may use the expression. Supposing that none of the States at all had made any effort to prevent what I call actual waste?

Mr. HILL. Yes, sir.

Mr. CROSSER. What would you say then as to the duty of the Federal Government?

Mr. HILL. Well now, I would not like to make any invidious comparison, but I believe that there is such a thing as the Government undertaking too many kinds and degrees of activity, which they cannot efficiently perform and I think that our Federal Government now has already embarked upon too many fields of private endeavor and with no particular credit to the Federal Government in those new fields of departure.

Mr. Crosser. You understand, I made specific reference to actual waste and not to any control of production for the purpose of determining prices, and so forth.

Mr. Hill. Waste is a matter of opinion; avoidable waste is a matter of opinion. We have an industry here with thousands of oil and gas fields, each one of which is different, with hundreds of thousands of oil wells, many of which change their producing characteristics from week to week and from month to month. The determination of what constitutes avoidable waste is a highly complicated and scientific problem. There must be a close association between the administrative body and the actual physical location of the field, to have any sort of an understanding of the problem. There must be opportunities for frequent hearings, so that where the administrative body has done something arbitrarily or unjustly, an opportunity must be given for prompt judicial review and relief. This sort of proposed set-up, to my mind—and I think I am being fair about it—is so hopelessly impossible that it staggers one's imagination.

Mr. Crosser. Do not misunderstand me. I am not questioning your sincerity or good faith at all; but there are certain things that would be considered by everybody to be actual waste; that is what I desire to have you discuss.

Mr. Hill. Except this——

Mr. Crosser. We need not confine ourselves to narrow fields.

Mr. Hill. Except this, that the persons primarily injured by excesses of waste are the landowner, the royalty owner, and the operator, and it means dollars and cents to them, and is an immediate thing. It is not a theoretical thing within the realm of government. It goes into the pocketbooks of everyone primarily affected.

If the operators for one moment were willing to create avoidable waste, that does not meet with the approval of the landowners and the royalty owners, and is a thing that is hurtful to the adjoining landowners and his neighbors. So, you have the most powerful human motives that are immediately and always exercised toward the prevention of that waste.

And, I think that is a more powerful, more intelligent, more exacting influence than the remote attempt to provide by generalities for the removal or avoidance even of waste.

Mr. Crosser. But, there are some States which make no effort, by law, to prevent waste.

Mr. Hill. There are two States in which there is no general law. I am not competent to speak about each, but I can express an opinion just for what it is worth. The industry general concedes, I think, that California has done a magnificant job upon a voluntary basis.

In the State of Illinois, it is a new development; but you have in that State a number of physical, mechanical, technological devices in use that are preventive of waste that were unheard of 10 years ago. That has just come along with the accumulated experience of the industry—in waste prevention. You have a large percentage of the operators there—in fact, a dominant percentage—who are doing everything they can to prevent avoidable waste. You have associations that have been organized and commercial clubs that are being mobilized for the purpose of trying to adopt a State law, and while I selfishly and personally would like to see that movement accelerated, I would rather see it done in their own sweet time and fashion than to have an illegality imposed upon them.

Mr. Crosser. Do not misunderstand me. I am not assuming that that this is a public utility, because I do not think so, in the true sense of the word; but I was very much interested to see how far your theory would go. I think prevention of waste is one thing, control for other purposes is another thing, and involves another preinciple. I wanted to make sure that I had your views on all aspects of the question.

Mr. Kelly. Mr. Hill, getting back to the Illinois situation, do you not think that there is, without State regulatory laws, or any action being taken by the State in the way of legislation to curb activities nowadays; do you not think that it is going to have some material effect in the next 2 or 3 years, on the State of Texas, that produces oil, and the State of Kansas, so far as the marketing of their oil in competition with a State that is not regulated is concerned?

Mr. Hill. Yes, I think it will, but—and it is a pressing problem—the total production of Illinois over its normal production is not a large percentage of our annual increase in domestic consumption. It hardly exceeds the normal annual increase.

Mr. Kelly. But it is increasing monthly?

Mr. Hill. Yes, sir; but that is flush production and it will have a very rapid decline.

Mr. Kelly. Well, they are certainly confronted with this problem and they have had ample time to get together and talk of some kind of a State regulatory law.

Mr. Hill. Well, I have understood that the dominant political forces there are very favorable to this administration and that influence could now be brought successfully to bear.

Mr. Kelly. I could probably tell you a lot about that myself, but I will not tell it for the record.

Mr. Hill. That is one of the hopes that the oil industry indulges in, that that persuasion will be exercised and that those beneficient results will accrue.

Mr. Kelly. I hope so.

Mr. Cole. I think that is all, Mr. Hill. Thank you very much, sir.

Mr. Hill. Thank you, Mr. Chairman.

Mr. Cole. You always make a very interesting statement. We have heard you before, and we are glad to have had you appear this time.

Mr. Hill. You are very kind and very patient, Mr. Chairman, and I want to thank you and all of the members of the committee for your courtesy and kindness to me.

The Chairman. We will hear Mr. Hardwicke.

STATEMENT OF ROBERT E. HARDWICKE, FORT WORTH, TEX.

Mr. Hardwicke. Mr. Chairman and members of the committee, in connection with the statement which I shall make, I am filing with the reporter a title and an outline, copies of which have been handed to you. When the record of these proceedings is printed the title and outline may be used as a part of the statement. It is hoped that page numbers of the printed record will be shown in the outline, thereby facilitating reference to any part of the statement.

PHASES OF LEGAL HISTORY AND PRACTICAL OPERATION OF CONSERVATION OF OIL BY THE STATES IN RELATION TO ASCERTAINMENT OF LIMITS OF A DESIRABLE PROGRAM OF ASSISTANCE BY THE FEDERAL GOVERNMENT

By ROBERT E. HARDWICKE for presentation to the subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, Seventy-sixth Congress, in connection with its petroleum investigating based on House Resolution 290 and H. R. 7372

OUTLINE

I. Preliminary remarks:
  - A. Identification and capacity in which appear.
  - B. Scope of discussion.
  - C. Contents of Legal History of Conservation of Oil and Gas, a Symposium, indicated.
  - D. Problems not all new.

II. Early conservation laws and methods:
  - A. General type of statute prior to 1915.
  - B. Trend of regulation from 1915 to 1930.

III. Modern statutory law:
  - A. Transition period 1930–1934.
    1. Kansas.
    2. Texas.
    3. Louisiana, Michigan, Arkansas, and New Mexico.
    4. California.
    5. Other States.
  - B. Present Statutory Phase, 1935–1940.
  - C. State Statutes are Constitutional.

IV. Similarity of existing State statutes:
  - A. Compilations and digests.
  - B. Fundamentals of State statutes.
    1. Waste defined and prohibited.
    2. Administrative agency created.
    3. Hearing and notice as basis for regulation.
    4. Distribution of allowable.
    5. Court review.
  - C. Subjects of special interest discussed:
    1. Rule of capture.
    2. Reasonable market demand.
    3. Optimum rate of flow.
    4. Economic waste.
    5. Proration.
    6. Distribution of allowable to States, and among the fields and operators therein.
    7. Pooling to prevent confiscation of small or irregularly shaped tracts.
    8. Unit operations.

V. Probable defects in existing State statutes:
  - A. Statutes generally satisfactory.
  - B. Compulsory pooling should be included.
  - C. Authorize voluntary unit operations.
  - D. Clarify function of court in connection with judicial review.

VI. Progress of administrative law.

VII. Any advantages of Federal control are offset by disadvantages:
  - A. Experiences with Federal control under Petroleum Code.
  - B. The five main claims of advantages from Federal control not justified.
    1. H. R. 7372 is not better than the average State law.
    2. Centralized control against local control.
    3. The absence of control in some States does not justify Federal regulation in all States.
    4. No certainty that officials would be better.
    5. Coordinated control too expensive.

VIII. Desirable functions of the Federal Government.
  A. Control of imports.
  B. Continue Connally Act.
  C. Improve interstate compacts.
  D. Dissemination of information.
    1. Papers by the United States Bureau of Mines.
    2. Papers by United States Geological Survey.
    3. Continuation of estimates of consumptive demand.
    4. Studies of economic problems.
    5. Studies with respect to legal problems.
    6. Investigations and reports with respect to waste and the remedy.
    7. Publication of books.
IX. Concluding remarks.

I. Preliminary Remarks

Mr. **Hardwicke**. Mr. Chairman, my name is Robert E. Hardwicke, member of the law firm of Hardwicke & Cheek, Fort Worth, Tex The firm is engaged in general practice. I attended the Virginia Military Institute and the University of Texas, 1906–11, receiving a law degree at the latter in 1911. Since that time I have practiced law, more often than not dealing with problems involving the oil industry or the law of oil and gas. I was a member of the legal department of subsidiaries of the Gulf Oil Corporation for about 12 years, being in Texas about 6 years, 1918–23, and in Venezuela about 6 years, 1923–29. I resigned in 1929, opening an office in Fort Worth. I have lived there ever since. A good part of my practice since 1929 has involved legal questions arising from governmental regulation of the oil and gas industries.

I have the honor to be chairman of the section of mineral law of the American Bar Association for the year 1939–40. As such chairman, I appear before this committee, seeking to give information pertinent to the points at issue, and offering the aid of the section in making additional research. During the last 10 years extensive regulation by the Government of various activities of the oil, gas and coal industries has offered to the section many important subjects for discussion, and for the preparation of papers.

It is fortunate that, in the spring of 1939, the section published a volume of 302 pages with the title "Legal History of Conservation of Oil and Gas, a Symposium," for the purpose of making generally available a great mass of source material having to do with a study of the many problems which are necessarily involved in the efforts of the States to enforce their conservation statutes. The contents of this volume will later be more fully indicated. It happens that I was the author of the paper in the volume which covers the history of conservation of oil in Texas, and that I was a member of the committee on publications which edited the papers and arranged for the publication of the volume.

No opportunity has been given to present to the section of mineral law a resolution which would reflect the opinion of the section either for or against Federal regulation of the character contemplated by H. R. 7372 now under consideration and generally designated as the Cole bill. Furthermore, there has been no meeting of the council of the section so that its viewpoint on the bill could be fully discussed, followed by a formal vote. It is clear, therefore, that I have no authority to speak for the section; however, I have communicated with members of the council, and only one has expressed the opinion that Federal regulation, such as is set forth in H. R. 7372, may be desirable. Most of the members of the council are very decidedly against such regulation; however, under all the circumstances, I do not purport to state the opinions, formally expressed, of either the section or the council. I am authorized, however, to present facts, but it should be understood that any expression of opinion represents my personal view on the subject under consideration, and not the opinion of the association, of the section, or of the council.

B. SCOPE OF DISCUSSION

The title of this paper indicates in a broad way the general scope of the discussion. The history of the regulation of oil production by the States ought to be of great value in considering any program of Federal regulation or assistance. It will be assumed that it is socially desirable, by governmental regulation, to prevent reasonably avoidable waste of the oil resources of the country. Whether the regulation should be done by the States, or by the Federal Government, or by the joint efforts of Federal and State Governments, is the real point at issue.

As a background, it seems desirable to sketch important phases of the evolution of State control from a legal viewpoint, though, obviously, the legal viewpoint comprehends to a considerable degree a discussion of problems which may properly be classified as social, political, and economic. It may be, from the wealth of material which is available, we can trace the trends which are indicated, and can interpret the forces which are operating—all for the purpose of ascertaining the rightful function of the Federal Government in the conservation program.

No attempt will be made to discuss in detail the provisions of the H. R. 7372, or to discuss the constitutional questions which are involved, for those subjects have been or will be covered fully by others.

C. CONTENTS OF "LEGAL HISTORY OF CONSERVATION OF OIL AND GAS, A SYMPOSIUM"

The book mentioned was published by the section of mineral law, American Bar Association, early in the spring of 1939. Separate papers were prepared covering the legal history of conservation of oil and gas in the following nine States, to wit: Arkansas, California, Kansas, Louisiana, Michigan, Mississippi, New Mexico, Oklahoma, and Texas. Two papers were prepared for Texas, one with respect to oil, and the other with respect to gas. The States mentioned include all of the major oil-producing States undertaking the regulation of oil and gas production. The authors of the papers are lawyers who were actively engaged in the practice of law, and who were participants in many of the events outlined, being familiar with what took place.

The volume also includes an article by Walter L. Summers entitled "The Modern Theory and Practical Application of Statutes for the Conservation of Oil and Gas." Mr. Summers is a professor in the Law School of the University of Illinois. In addition to considerable experience gained as a lawyer representing his clients in matters involving oil and gas law, he has taught that subject and also real property for many years, and is the author of an outstanding textbook on oil and gas law (Summers, The Law of Oil and Gas), the second edition of which, in eight volumes, was recently published.

Finally, the volume of legal histories includes, in the appendix, the oil and gas conservation law which was passed in New Mexico in 1935, and which is generally conceded to be the model for all subsequent legislation on the subject.

In the foreword to the volume, the following paragraph appears:

> Moreover, these histories, particularly with respect to Texas and Oklahoma, constitute original source material of great value for a study of governmental regulation of private industry. Here are vivid experiences disclosing the conflict between legislative, executive, and judicial branches of government, and the difficulty of protecting an industry and its members from unwise or arbitrary acts of governmental officials or agencies, be they executive, legislative or judicial. Here also are vivid experiences disclosing the conflict between Federal and State Governments, with indication of the benefits and dangers attending governmental regulation, whatever may be the system of regulation which in theory seems to be the better.

The volume mentioned does not cover, except incidentally, the history of Federal regulation, particularly the regulation under the National Industrial Recovery Act and the Petroleum Code which was formulated thereunder. The original program contemplated the publication of a paper by Mr. Northcutt Ely, specifically covering Federal regulation, but there was delay in its completion; consequently, it had to be omitted from the volume which was published. The paper has not yet been completed. The section of mineral law is now undertaking to make arrangements for its publication as a companion volume to that already published covering State regulation. It is likely that the Federal history will be available during this year.

D. PROBLEM NOT ALL NEW

Reference to a few historical items, though not to be taken very seriously, may be of some interest at this point. It appears that the oil industry in the United States began with the completion of the Drake well in 1859, at a depth of about 70 feet, yet the records show that overproduction and its attendant waste were recorded as early as 2 years later, in 1861. The following is taken from a chronological account in The Derrick's Handbook of Petroleum:[1]

> OCTOBER. So much oil is produced it is impossible to care for it, and thousands of barrels are running into the creek; the surface of the river is covered with oil for miles below Franklin. Some wells are being plugged to save the production. Fears are entertained that the supply will soon be exhausted if something is not done to prevent the waste.

Oilmen a few months later became worried over the probable activities of the Federal Government, for the following appears in the book mentioned, as an event during March 1862:[2]

> Congress proposes to tax petroleum 5 cents per gallon on crude and 10 cents per gallon refined; oilmen anxious and alarmed.

One method of protection against competition of foreign oils is indicated in an item in the handbook, under date February, 1864, reading as follows:[3]

> A petition, largely signed by manufacturers and dealers in petroleum in Philadelphia, urges Congress to impose a duty of 5 cents per gallon upon crude oil.

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[1] Derrick Publishing Co., The Derrick's Handbook of Petroleum (1898), 24.

[2] Derrick Publishing Co., The Derrick's Handbook of Petroleum (1898), 26.

[3] Derrick Publishing Co., The Derrick's Handbook of Petroleum (1898), 37.

In that same year, the activities of the "doodle-bug" scientists are recorded in the following language:[4]

> In answer to a letter of inquiry made some time ago regarding the efficacy of the divining rod, Prof. Benjamin Silliman of New Haven, Conn., writes the Register, under date of August 28, 1864: "The pretensions of diviners are worthless. The art of finding fountains or minerals by a peculiar twig is a cheat upon those who practice it, an offense to reason and common sense, an art abhorrent to the laws of nature, and deserves universal reprobation."[5]

Finally, if the records of the Chinese were available, it is probable that they would throw some light upon a proper solution of many of the problems which have confronted the oil and gas industry in the United States. Drake is given great credit for the methods used in completing an oil well at a depth of less than 60 feet. The Chinese, however, as early as 1,000 years ago, drilled water wells to depths of 3,000 feet, using bamboo casing. Some of these wells produced inflammable gas, and it appears that much of this gas was for a time wasted by being burned in flares; however, in due course much of it was employed as a combustible. The records at hand do not show whether this was brought about by governmental regulation. Swindell and Burnell, Wells and Well-Sinking (1st ed. 1851), 2.

II. Early Conservation Laws and Methods

A. GENERAL TYPE OF STATUTE PRIOR TO 1915

In the Legal History of Conservation of Oil and Gas, a Symposium, as well as in the prepared statement by Hon. Harold L. Ickes, Secretary of the Interior, filed in the hearing before this committee in November 1939, a few of the early State statutes are discussed.[6]

Prior to 1915, the statutes were designed to prevent various types of physical waste above ground, such as fires, escape of oil and gas from the well, wasteful burning of oil and gas, and improper plugging.

These statutes dealt largely with individual wells. There was no effort to control the amount of the production from the wells, or to deal with a field as a whole, or with what is now generally called "underground waste". It is quite significant, however, that the opinion of the Supreme Court of the United States in the *Ohio Oil Company case*, upholding a statute of Indiana requiring, in effect, the closing in of oil wells unless the gas could be utilized, is a landmark in any discussion of constitutional law with respect to control by the States of production of oil and gas.[7] That case established two fundamental principles: (1) Under police power, the State may prevent the waste of oil and gas in the public interest, inasmuch as an irreplaceable natural resource is involved, and (2) may prevent the waste of oil and gas as a means of adjusting and protecting the conflicting rights of those privileged to produce from a common source of supply.

B. TREND OF REGULATION FROM 1915 TO 1930

Wide-open and wasteful production in the Cushing and Healdton Fields of Oklahoma in 1914 and 1915, resulting in great waste, overproduction, low prices, and other evils attending wide-open flow of great flush fields, were the stimuli which brought about the passage in 1915 of the Oklahoma conservation act from which stem all of the modern acts.[8] The facts surrounding the passage of that act are detailed in a very interesting manner by W. P. Z. German in Legal History of Conservation of Oil and Gas, A Symposium, beginning at page 116. According to the statement by Hon. Harold L. Ickes Secretary of the Interior, given in the hearing before this committee on November 10, 1939,[9] representatives of the Federal Government assisted in drafting the Oklahoma act of 1915. The statute provided, in part—

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[4] Derrick Publishing Co., The Derrick's Handbook of Petroleum (1898). 42.

[5] It may not be out of place to mention just here that the divining-rod method of discovering subsurface deposits has received such extensive treatment that the Federal Government in 1934 reprinted a paper by Arthur J. Ellis, first published in 1917, under the title "The Divining Rod, a History of Water Witching," with a bibliography. The bibliography alone, though printed in small type, covers more than 25 pages.

[6] Section of Mineral Law (A. B. A.), Legal History of Conservation of Oil and Gas, A Symposium (1939), 217; Hearing before a subcommittee of the Committee on Interstate and Foreign Commerce on H. Res. 290 and H. R. 7372, 73d Cong. 1st sess. (1939), 515.

[7] *Ohio Oil Company* v. *Indiana* (177 U. S. 190, 20 S. Ct. 576, 44 L. Ed. 729 (1900)).

> that the production of crude oil or petroleum in the State of Oklahoma in such manner and under such conditions as to constitute waste is hereby prohibited.

In a subsequent section the following language appears:

> That the term "waste" as used herein, in addition to its ordinary meaning, shall include economic waste, underground waste, surface waste, and waste incident to the production of crude oil or petroleum in excess of transportation or marketing facilities or reasonable market demands.

The statute also provided that, whenever the full production from any common source of supply can only be obtained under conditions constituting waste, then the Corporation Commission, as the administrative agency, is authorized to control production in such common source of supply—

> to prevent the inequitable or unfair taking * * * and to prevent unreasonable discrimination in favor of any one such common source of supply as against another.

When restricting the total production of any common source of supply, the statute provided that the productive ability of the wells was to be taken into account.

There are other far-reaching provisions of the statute which need not here be mentioned. It is obvious that a very extensive type of control was contemplated. It is also clear that those who wrote the statute had at least sensed that unrestricted production, particularly in flush fields, probably caused reactions in the reservoir which reduced materially ultimate recovery therefrom. No doubt operators and public-spirited citizens became alarmed over the wasteful practices which usually attended the bringing in of large oil fields and, consequently, began a more scientific study of oil-field practices. The Federal Government, through the United States Geological Survey and the United States Bureau of Mines, likewise began studies. There were a number of papers released by the United States Bureau of Mines about 1915 on the subject of waste, two of which are mentioned in the footnotes.[10]

It appears, however, that shortly after the Oklahoma statute of 1915 was passed, and the orders were issued thereunder, the flush production declined. Furthermore, there was a great increase in demand, probably because of the war, and also an increase in prices. There was little effort between 1916 and 1930 to apply the Oklahoma conservation statute.

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[8] Blatchley, Waste of Oil and Gas in the Mid-Continent Fields (1913), T. P. 45; McMurray & Lewis Underground Wastes in Oil and Gas Fields and Methods of Prevention (1916), T. P. 130.

[9] See p. 517.

[10] In addition to papers cited in footnote 8, supra, see Arnold and Clapp, Wastes in the Production and Utilitization of Natural Gas and Means for Their Prevention (1913) T. P. 38: and Arnold and Garfias, The Prevention of Waste of Oil and Gas from Flowing Wells in California, with a Discussion of Special Methods Used by J. A. Pollard (1913), T. P. 42.

It is evident, however, that, beginning even prior to 1920, scientific studies were being made for the sole purpose of preventing waste, or, stated otherwise, to increase ultimate recovery. The papers to be given in these hearings by engineers, geologists, and operators, will go into detail in respect to these matters; however, it may definitely be stated here that, prior to 1930, which was in the preproration period, various papers had been published announcing principles of production which are the fundamentals supporting the modern conservation statutes and the production-control practices provided for in the regulations and orders of the administrative agencies.[11]

Too often, without justification, it has been said that production control and so-called proration practices, which began in 1930 and which are now quite common, had no reasonable relation to the prevention of physical waste, but were nothing more than stabilization and price-fixing schemes.

May I repeat that many papers were published between 1920 and 1930 dealing with the waste of oil and gas, and urging conservation practices which are now in common use, yet there was no thought of stabilization, or of production control as a price-fixing measure under the guise of conservation. The relation of conservation practices and stabilization will be discussed in a subsequent part of this paper.

III. Modern Statutory Law

A. TRANSITION PERIOD, 1930–34

The full texts of oil and gas conservation statutes in 1931 and in 1933 are given in two publications of the Federal Oil Conservation Board, referred to in the footnote.[12]

1. *Kansas.*—No doubt the court approval of the Oklahoma statute of 1915,[13] and the control of production by the Oklahoma Corporation Commission, influenced the Legislature of Kansas to pass its act of 1931 which followed very closely the Oklahoma act. By the Kansas statute, the production of oil in a wasteful manner was prohibited, and then the following language appeared:

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[11] In 1921 R. Van A. Mills, of the U. S. Bureau of Mines, as a part of his studies and experiments with respect to proper methods of oil production, wrote a paper styled "The Relations of Texture and Bedding to the Movements of Oil and Water Through Sands," published in Economic Geology, issue of March 1921 (vol. XVI, No. 2), 24. That paper shows the value of reasonably slow production of oil, as distinguished from wide-open flow, the underground waste which occurs from premature and irregular water encroachment, and the effect of water coning and channeling. The principles announced by Mills in 1921 are now generally recognized, and have been used in connection with waste prevention throughout the country, particularly in the East Texas field. Similar experiments with the same results were repeated years later by Wilde and Lahee, described in Simple Principles of Efficient Oil Field Development, 17 Bull. Am. Ass'n. Pet. Geog. (No. 8), 981 (August 1933).

In 1924 Henry L. Doherty, in a paper prepared for the annual meeting of the American Institute of Mining and Metallurgical Engineers, styled "Suggestions for Conservation of Petroleum by Production Control," urged rigid conservation practices, including gas conservation and unit operations, to take the place of unrestricted competition and the drill-and-produce-as-you-please methods which had long been in vogue. This paper created something of a sensation in the industry, and stimulated technical studies.

The danger of a scarcity of oil in the early twenties, which in turn gave some concern with respect to wasteful practices, caused the appointment of the Federal Oil Conservation Board. Such board and the American Petroleum Institute made extensive studies with respect to waste, with especial emphasis on the function of gas in the production of oil. The reports of the Federal Oil Conservation Board cover in some detail wasteful practices and the remedies.

Prior to 1929 the American Petroleum Institute joined the United States Bureau of Mines in making a survey of conditions throughout the Nation, largely to determine the waste which takes place as a result of excessive production of gas which is associated with oil. The material and data which were obtained were finally organized by H. C. Miller, of the U. S. Bureau of Mines, in the form of a report which was published in 1929 in book form under the title "Function of Natural Gas in the Production of Oil." The fundamental principles set forth in that volume with respect to the conservation of gas as an oil conservation measure form the bases of modern regulation.

[12] State and Federal Conservation Laws and Regulations relating to Production of Oil and Gas (1931) and The Oil and Gas Conservation Statutes, Annotated (1933), by Northcutt Ely.

[13] *Julian Oil and Royalties Co.* v. *Capshaw* (145 Okla. 237, 292 Pac. 841 (Oct. 14, 1930)).

> That the term "waste" as used herein, in addition to its ordinary meaning, shall include underground waste, surface waste, and waste of gas energy, or waste incident to the production of crude oil or petroleum.

It will be observed that the definition of "waste" did not, as in Oklahoma, specifically include "economic waste" or "production in excess of reasonable market demand"; however, the Legislature of Kansas in 1933 amended the statute to include "economic waste" and—

> waste incident to the production of crude oil or petroleum in excess of transportation or marketing facilities or reasonable market demands.[14]

2. *Texas.*—The battles in Texas over proration, market-demand limitation, and the like, involving the oil industry, the Railroad Commission of Texas, the Governor, legislatures, State and Federal courts, martial law, price gyrations, "hot oil," and other colorful democratic processes, which finally more or less settled the statutory law in Texas, are indicated in the footnote. It makes interesting reading.[15]

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[14] Act of March 18, 1933, ch. 214.

[15] The Railroad Commission of Texas, by its order effective August 22, 1930, undertook to follow the lead of Oklahoma in restricting the total production of the State to a figure found to be the reasonable market demand. The total production in Texas was reduced below the average for 1929. The commission based its order on an act of the Forty-first legislature, regular session of 1929, chapter 313, amending article 6014 of the Revised Civil Statutes of 1925, such statute as amended reading in part as follows:

"Neither natural gas nor crude petroleum shall be produced, transported, stored, or used in such manner or under such conditions as to constitute waste: provided, however, this shall not be construed to mean economic waste. The term 'waste' in addition to its ordinary meaning shall include permitting (a) escape into the open air of natural gas except as may be necessary in the drilling or operation of a well; (b) drowning with water of any stratum capable of producing oil or gas or both oil and gas in paying quantities; (c) underground waste; (d) any natural gas well to wastefully burn; (e) the wasteful utilization of natural gas; (f) the creation of unnecessary fire hazards."

The history of this statute, the litigation which followed, and the various amendments which were made, are all discussed in detail, beginning at page 219 of Legal History of Conservation of Oil and Gas, a Symposium. It is observed, however, that, while the statute generally and specifically defined waste above ground and underground, there was no specific definition which declared production in excess of reasonable market demand to be waste. Furthermore, the statute did provide that waste "shall not be construed to mean economic waste."

Very promptly a suit (*Danciger case*) was filed in the State court, attaching the validity of the statute and regulatory orders for the Panhandle field on the ground that limitation of production to market demand had no reasonable relation to the prevention of physical waste, but dealt with economic waste, which was prohibited by statute and was nothing more than a price-fixing program. Shortly thereafter a similar suit (*Macmillan case*) was filed in the Federal court, involving the validity of orders for the East Texas field. In the State suit, *Danciger case*, the trial court, in February 1931, held that limitation of production to reasonable market demand prevented wasteful and unnecessary storage and other forms of physical waste; consequently, the commission was authorized to adopt that means of preventing physical waste. Furthermore, the court held that limitation of production was not an economic waste measure prohibited by the statute, and was not a price-fixing program. The case was promptly appealed to the court of civil appeals, third district, an intermediate appellate court.

The *Macmillan case* was tried in the Federal district court before three judges in June 1931. It was reasonably apparent from what took place at the trial that the judges would likely hold to be invalid the regulation of production in the East Texas field. Furthermore, a number of injunctions had been issued, restraining the commission from enforcing its orders. Finally, many operators were ignoring the orders and producing as they pleased under the theory that the courts would finally declare the orders to be invalid, and consequently no penalties could be imposed for violation. The State was flooded with oil. There was fear throughout the State that the statutes were not adequate or that adverse decisions would be rendered by the courts under the statutes as they existed; consequently, many operators thought additional legislation should be sought. For that purpose, Governor Ross S. Sterling called a special session of the legislature to convene July 14, 1931. The details of that historic session are set forth in Legal History of Conservation of Oil and Gas, a Symposium, beginning at page 230.

While the legislature was in session, the three-judge court in the *Macmillan case* held that the evidence showed that limitation of production to reasonable market demand was not a physical waste measure but to the contrary had to do with price fixing and, therefore, was within the prohibition of the statute which provided that the word "waste" "should not be construed to mean economic waste." *Macmillan* v. *R. R. Comm.* (51 F. (2d) 400 (W. D. Tex., July 28, 1931)).

Beyond doubt, the decision by the Federal court greatly influenced the legislature and the Governor, resulting, after a bitter fight, in a new statute which, instead of specifically authorizing limitation of production to reasonable market demand, provided that waste "shall not be construed to mean economic waste, and the commission shall not have the power to attempt, by order or otherwise, directly or indirectly to limit the production of oil to equal the existing market demand for oil; and that power is expressly withheld from the Commission and no part of this act shall be construed so as to prevent the storage of oil except for the prevention of physical waste." (Acts 42 Leg., first called sess., 1931, ch. 26, p. 46.)

While the legislature was in session, the East Texas field had gotten entirely out of hand, the production probably exceeding a million barrels a day. On the very day the "anti-market-demand act" was passed the price had gone down to about 10 cents a barrel. It was generally conceded that, although the commission should promptly call a hearing and issue a new order under the statute, it would take something like 2 weeks before the order would finally be effective, and it was doubtful whether the courts would uphold, under the new statute, an order for the East Texas field which would really have the effect of limiting materially the production. Unquestionably, there was much unrest, and even threats of violence. The Governor declared that a state of insurrection existed (such as threats to riot, blow up pipe lines, set fire to oil

3. *Louisiana, Michigan, Arkansas, and New Mexico.*—The history of legislation prior to 1935 in the above-mentioned States is given fully in Legal History of Conservation of Oil and Gas, A Symposium. The legislative acts in each such State, in general and special terms, prohibited waste and authorized an administrative agency to enforc the act. There was no specific language in the acts of this period defining as waste the production in excess of reasonable market demand.

4. *California.*—The fruitless effort of California to make effective a comprehensive conservation law is indicated in the footnote.[16]

5. *Other States.*—The production in States not mentioned above was so small during the period 1930–35 that no effort was made to exercise control such as was attempted in California and the Mid-

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wells, or the like), so he declared martial law on August 17, 1931, partly to protect the field until the commission could issue its order. The railroad commission held a hearing under the new law, and undertook to issue an order for East Texas field, placing the allowable production at about 400,000 barrels a day. The Governor, by executive order, adopted the order of the railroad commission and then undertook to enforce it by the use of the militia. The action of the Governor was promptly challenged by a suit filed in the Federal court, resulting in a decree enjoining the Governor and the military authorities from undertaking to control the field under the guise of martial law. *E. Constantin* v. *Smith* (57 F. (2d) 227 (E. D. Tex., Feb. 18, 1932)). Pending appeal, the troops remained in the field, undertaking to make and enforce production-control orders, until the Supreme Court, on December 12, 1932, affirmed the decree of the lower court of three judges (287 U. S. 378, 53 S. Ct. 190, 77 L. Ed. 375).

The railroad commission then undertook to make and enforce its own order; but once more many suits were filed and again the Federal courts declared the orders to be nothing but a scheme to limit production to reasonable market demand which was in clear terms prohibited by the statute. *People's Petroleum Producers, Inc.* v. *Smith* (1 F. Supp. 361 (E. D. Tex., Oct. 24, 1932)). In the meantime, the court of civil appeals, third district, had filed its opinion in the *Danciger case*, based upon the 1929 statute. The court upheld the regulation to reasonable market demand as being a physical waste measure, not an economic waste measure. The opinion in this case was generally conceded to be directly in conflict with the opinion in the *Macmillan case*. *Danciger Oil & Refining Co.* v. *R. R. Comm.* (49 S. W. (2d) 837 (March 23, 1932)).

Two months later, the Supreme Court of the United States, in the *Champlin case*, upheld orders of the corporation commission of Oklahoma limiting production to reasonable market demand, declaring that such limitation was a reasonable and proper method of preventing excessive and wasteful above-ground storage and other forms of physical waste, and that, if such limitation affected prices, it was wholly immaterial, as the effect upon price was merely incidental to the exercise of power to prevent physical waste. *Champlin Ref. Co.* v. *Okla. Corp. Comm.* (286 U. S. 210, 76 L. Ed. 1062, 52 S. Ct. 559 (May 16, 1932)).

The Texas law, however, specifically prohibited the consideration of market demand, either directly or indirectly, and the Federal courts in a number of cases which were filed declared that the commission in limiting the production in the East Texas field was in fact basing the limitation not upon any physical waste but upon reasonable market demand, contrary to the anti-market-demand statute. Once more it appeared that the State would be flooded with oil and that the production in the East Texas field would reach an enormous figure, causing all manner of physical waste, as well as causing a rapid decline in price. The Governor called a special session, and, after a short session, the legislature passed, on November 12, 1932, what is known as the "market-demand act" (Acts 42d Leg., fourth called sess., 1932, ch. 2, p. 3).

The new law was not fundamentally different from the old one, except that there was no prohibition against the consideration of economic waste or against the limitation of production to reasonable market demand. In fact, the act of November 12, 1932, specifically defined as waste "the production of crude petroleum oil in excess of transportation or market facilities or reasonable market demand."

It will be observed that the language used is almost exactly the language in the Oklahoma statute. One wonders what the legislature would have done at its special session in 1931, when it passed the "ant-imarket-demand act," if the *Macmillan case* had been decided differently, or if the opinion of the court of civil appeals in the *Danciger case*. and the opinion of the Supreme Court of the United States in the *Champlin case*, had been decided prior to the date of the special session.

The Texas Legislature, prior to 1935, made various changes in the conservation statutes, such as improving upon the procedure, providing for obtaining information with respect to production and movement of oil, and for the enforcement of the statutes and regulations. There is no need here to detail the changes made in the Texas statutes. The fundamentals were settled by the "market-demand act" of 1932.

[16] California has had a rather interesting history from a legal viewpoint. It is fully detailed in the article by Howard Marshall, beginning on p. 28 of Legal History of Conservation of Oil and Gas, A Symposium. In 1931, the conservation statutes in California were rather meager, except with respect to the unreasonable waste of gas. The legislature in 1931 passed a comprehsenive conservation act, known as the Sharkey bill, which in its fundamentals was similar to the Oklahoma law in that waste was defined in some detail, and authority was given to restrict production to reasonable market demand. On a referendum vote, following a bitter campaign, the bill was defeated, so production control in California has been based upon the older statutes, or upon voluntary agreement, except during the period in which the Federal Government undertook to exercise control under the Petroleum Code.

Continent States; consequently, there is no need to refer to any conservation statutes which existed in those States at that time.

Beyond doubt, the great majority of oil men who urged in 1930 the enforcement of conservation statutes as a means of stopping overproduction were more interested in the probable effect upon price than upon prevention of physical waste. However— the industry finally realized that conservation practices were, for themselves alone, highly desirable activities. Here we have illustration of the fact that often a great movement originates largely through accident.

By 1935, it was well recognized that State regulation was desirable along fundamental lines which had been established by the trial and error method. The modern phase, with its trend toward refinement of statutory law and improvement of technique, will next be discussed.

B. PRESENT STATUTORY PHASE, 1935–40

Modern statutory law began with the New Mexico Act of 1935. For the first time, (1) a statutory definition of reasonable market demand appears, (2) pooling of tracts to prevent confiscation and unnecessary drilling is provided for, and (3) the regulatory agency in clear terms is directed to allocate the field allowable substantially on the bais of comparative recoverable reserves.

A brief digest of the act is given in the footnote.[17]

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[17] The act is copied in full in the appendix of Legal History of Conservation of Oil and Gas, A Symposium, p. 289, being ch. 72 of acts of New Mexico, 1935. Beyond doubt, it was the finest act of its kind. It was not a mere patchwork, such as usually results from a series of amendments to prior laws. Fundamentally, it did not differ very greatly from the laws in Oklahoma, Kansas, and Texas, though it did cover the whole subject matter, leaving very little to implication The act prohibits waste generally, and then defines waste in more specific terms in order to embrace every conceivable type of waste, either above ground to underground. In order to make certain that production in excess of reasonable market demand constituted waste, such definition was given. and the words "reasonable market demand" were then defined. "Waste" was declared to include:

"The production of crude petroleum oil in this State in excess of the resaonable market demand for such crude petroleum oil. Such excess produci⁴on causes or result sin waste which is prohibited by this act. The words 'reasonable market demand', as used herein, shall be construed to mean the demand for such crude petroleum oil for reasonable current requirements for current consujption and use within or outside the State, together with the demand for such amounts as are reasonably necessary for building up or maintaining reasonable storage reserves of crude petroleum oil or the products thereof, or both such crude petroleum oil and products."

As stated in the text above, the outstanding features of the New Mexico act in which this committee is interested have to do with (1) distribution of allowable, (2) unnecessary wells, and (3) pooling. The statute provides in substance that, whenever the Commission finds it necessary to fix the allowable for any pool or field at less than capacity production, then the allowable shall be allocated or prorated among the producers "on a reasonable basis" which is declared to be substantially in the proportion that the reserves (recoverable oil) in each tract bear to the reserves in the field. This was the first statute which in terms provided for distribution based upon the relative amounts of oil reserves under each tract as distinguished from distribution based upon number of wells, the potentials of wells, or the like. The statute specifically declares that the drilling of unnecessary wells is wasteful and authorizes the Commission to establish proration units or drilling units in order to make it possible for operators to avoid drilling unnecessary wells. Furthermore, the statute provides that "no owner of a propeity in a pool should be required by the Commission, directly or indirectly, to drill more wells than are reasonably necessary to secure his proportionate part of the production."

In order to avoid the drilling of unnecessary wells, the Commission is authorized to issue an order for the pooling of tracts which could not be drilled in conformity with a uniform spacing or proration unit program, however, a proviso is added to the paragraph relating to pooling to the effect that an operator may refuse to comply with the pooling order, electing to drill on his own tract, though in such an instance the statute provides that the allowable production shall be that proportion of the allowable for a full unit which the acreage of the tract within the unit bears to the total acreage of a unit. The New Mexico statute is considered to be defective in that it does not authorize compulsory pooling with no right whatever by an operator to refuse to pool, electing to drill on his tract. thereby forcing the owners of the balance of the area within the unit to drill one or more wells in order to get their proportionate part of the allowable for the full unit. The subject of pooling will be discussed in greater detail in section IV.

A few months after the New Mexico act was passed, Oklahoma amended its law, also providing for pooling of small tracts. The scope of the statute is indicated in the footnote.[18] The next year, 1936, Louisiana closely followed the New Mexico act,[19] while Mississippi made some amendments to its earlier statutes.[20]

A high point in modern legislation was reached with the Arkansas act of 1939. On February 20, 1939, the Governor of Arkansas approved an oil and gas conservation act which stands today as the best. It follows very closely the New Mexico act; but it is generally conceded to be an improvement over such act, partly because of some improvement in phraseology and draftsmanship, but largely because the regulatory commission is authorized to enforce compulsory pooling to prevent confiscation of small and irregularly shaped tracts, and to prevent the drilling of unnecessary wells. It may be added that the Arkansas law, with respect to the conservation provisions, follows very closely a bill which was introduced in the Mississippi Legislature in 1938, as well as a draft of a bill prepared by Mr. Walter L. Summers as suitable for Illinois.

Kansas improved its statutes somewhat in 1939,[21] followed shortly by Michigan,[22] though a referendum vote in November 1939 made ineffective a fairly good bill which had been passed by the California Legislature.[23]

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[18] A very significant change was made in the Oklahoma conservation laws by ch. 59 of acts of 1935. In addition to expanding the definition of waste, the statute makes elaborate provision for establishing well spacing and drilling units. In substance, it is provided that the corporation commission has the right to establish a drilling unit as a part of a program to establish uniform spacing and to prevent the drilling of unnecessary wells. It is provided that, if the lessees so agree, only one well shall be drilled as a unit, and the owners of the acreage in the unit shall share proportionately, according to acreage, the expenses and production. This agreement is declared to be binding on the lessors. If the owner of the majority of the acreage in the unit announces intention to drill, the owner of the minority may elect to pool, paying his share of the expense and getting his share of the production. The drilling and production then become a joint venture. It is not quite clear what would happen if the owner of the minority acreage wanted to drill and the majority owner did not. As we shall see later, a pooling agreement based upon the statute was upheld by the Supreme Court of Oklahoma and by the Supreme Court of the United States. Should no pooling agreement be made, it appears that each lessee may drill on his tract, but the allowable is fixed as that part of the allowable for the unit which the acreage in his tract bears to the acreage of the full unit.

Having the power to fix spacing units, and otherwise to prevent discrimination in the distribution of allowable, the commission, by this new statute, is in a position better to prevent inequities which had theretofore arisen because of differences in drilling densities, together with distribution of allowable based solely upon potential, regardless of the size of the tract upon which the well was located.

[19] The Louisiana statute, No. 225 of acts of 1936, provides for distribution of the allowable production for any field on a reasonable basis, and so that an operator will be allowed "to produce his just and equitable share of the oil and gas, so far as can be practically obtained without waste, and for this purpose to use his just and equitable share of the reservoir energy." The statute also provides for pooling, following very closely the provision of the New Mexico statute on that subject.

[20] The Mississippi Legislature amended its existing conservation laws by broadening the definitions of waste with respect to both oil and gas, and specifically authorizing the limitation of production of gas to market demand. Inferentially at least, the statute authorized similar limitation with respect to oil (ch. 305, Laws of 1936).

In 1938 a conservation bill was introduced in the legislature and was approved, after some amendments, by the committee on conservation in the senate. The bill never came to a vote; however, that bill, which in turn had been based on the New Mexico law, was followed quite closely by the author of the Arkansas bill which was passed in 1939.

[21] S. B. 185, passed in April 1939, makes at least two important changes by: (1) Providing more definitely for distribution of the State allowable among the pools, and (2) providing specifically that, in prorating the allowable production among the operators in the pool, the Commission should consider not only the productivity of each well but also "(*b*) the acreage of each well owner which is reasonably attributable to each of his wells; and (*c*) the efficient utilization of the reservoir energy in the pool."

Under this new act the regulatory commission is specifically authorized to consider other factors than mere well potentials, and, in effect, it provides that, in making allocation, the reserves of each tract should be considered in order to avoid unreasonable drainage from one tract to another.

[22] On May 13, 1939, the Governor signed a bill which also followed quite closely the New Mexico act of 1935. The Michigan law follows substantially the language of the Arkansas statute by requiring the distribution of allowable to be made in such manner "as to prevent or minimize reasonably avoidable drainage from each developed area which is not equalized by counterdrainage."

Unfortunately, some provisions of the New Mexico and Arkansas statutes were omitted or altered so that, while on the whole the Michigan law is reasonably satisfactory, it is not as satisfactory as either the Arkansas or New Mexico law.

[23] In 1939, the California Legislature passed what is known as the Atkinson bill (assembly bill No. 1926) which was also patterned somewhat after the New Mexico act; but once more, as in 1931, on referendum vote, the bill was defeated. California does not have any comprehensive conservation statutes, but obtains rather effective regulation by the gas-oil ratio statute, plus a voluntary-agreement program.

There have been no amendments of any consequence to the Texas conservation laws since 1935. The courts, however, have been quite busy interpreting the statutes, declaring the rights of operators and the duties of the regulatory agency, all of which is shown in some detail in "Legal History of Conservation of Oil and Gas, a Symposium." In the footnote will be found a brief discussion of the temporary nature of the Texas conservation act.[24]

C. STATE STATUTES ARE CONSTITUTIONAL

Beyond question, it is now well established that a State, in the exercise of police power, may regulate the production of oil and gas for the purpose of preventing waste, whether such action be taken in the public interest or to protect the private interests of those who have the right to produce oil and gas. Broadly speaking, it is reasonably clear that existing conservation statutes are constitutional. There may be some provisions which are illegal, and it may well be that some regulations or orders of the administrative agencies are invalid, yet it can be said that, considering fundamentals only, the State statutes are constitutional.[25]

IV. SIMILARITY OF EXISTING STATE STATUTES

A. COMPILATIONS AND DIGESTS

The conservation statutes in the various States are found in volume 5 of Summers, The Law of Oil and Gas (perm. ed. 1939), including pocket parts, and in volumes 4 and 5 Thornton, The Law of Oil and Gas (1933 ed.), including pocket parts or supplements. A rather comprehensive digest of the existing statutes, compiled by Earl Foster and James C. Hamill, of Oklahoma, begins on page 283 of Finding and Producing Oil, a volume published by the American Petroleum Institute in 1939. Comparison of the conservation statutes and regulations of seven States appears in tabular form, pages 206 et seq. of Energy Resources and National Policy, a report of the Energy Resources Committee to the National Resources Committee, published in 1939 by the National Resources Committee, of Washington, D. C.

Reference is again made to Legal History of Conservation of Oil and Gas, a Symposium, which gives the status of legislation in the nine States as of January 1, 1939.

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[24] There is one fature of the conservation act of Texas which justifies comment. The "market-demand act" which was passed in 1932 contained a section declaring that the act would expire September 1, 1935. At the regular session of 1935 a few amendments were made in the 1932 act; but, for all practical purposes, the new law was a reenactment of the old statute, but with the provision that the new act would expire September 1, 1937. In the session of 1937, the act was extended to September 1, 1939, and then in 1939 it was extended for an additional 2 years, so that the existing conservation laws which are contained in the so-called "market-demand act" will expire September 1, 1941, unless further extension be obtained.

Various explanations have been given for the temporary character of the Texas act. Usually it is said that the necessity of renewing the act to keep it from expiring forces legislative action, and makes it easier to secure amendments which will cover defects disclosed by past experience. Obviously, an act may be amended whether or not it has a provision for expiration. It has been said, no doubt facetiously, that the lobbyists were strong enough to persuade the legislature to make the act temporary so that they could get employment every 2 years to fight or help pass it. Whether or not there is any satisfactory reason for having a temporary act, that practice has been followed in Texas since 1932. Three extensions have been obtained without any great difficulty, so, for all practical purposes, it may be said that the Texas act is just as permanent as one which had no provision for termination at the end of any definite period.

[25] Many cases and articles are cited in Hardwicke, Rule of Capture and Its Implications as Applied to Oil and Gas (13 Tex. L. Rev. 391) (July 1935), footnote 26, being a paper read before the annual meeting of the Section of Mineral Law (A. B. A.), in 1935. See Ely, The Conservation of Oil (51 Harv. L. Rev. 1209) (May 1938), and the exhaustive discussion of constitutionality of conservation legislation in I Summers, The Law of Oil and Gas (perm. ed. 1938), sec. 106.

B. FUNDAMENTALS OF STATE STATUTES

1. *Waste defined and prohibited.*—The statutes prohibit waste which is then usually defined in both general and specific terms, frequently including, as a specific definition, production in excess of reasonable market demand.

2. *Administrative agency created.*—The typical act creates an administrative agency Which is authorized to promulgate rules, regulations, and orders reasonably necessary to make the law effective. There are various types of administrative agencies; for instance, in Texas the members of the agency are elected by a vote of the people; while in Arkansas the members are appointed by the Governor; while in New Mexico the agency is composed of the Governor, the commissioner of public lands and the State geologist.

In most of the early cases in which the validity of the conservation statutes or the regulation was under attack, the point was usually raised that legislative authority had been delegated to the administrative agency; however, the courts consistently held that the statutes were constitutional inasmuch as sufficient standards had been established by the legislature, leaving to the administrative agency nothing but administrative functions.[26]

3. *Hearing and notice as basis for regulations.*—On the whole, the statutes contain provisions which provide for notice and a hearing before the administrative agency issues its regulations. Most of these statutes provide that any interested party has the right to appear and be heard, to introduce evidence and otherwise to participate in the proceeding so that his viewpoint may be fully developed. Whether due process of law requires notice and a hearing as prerequisites to a valid regulation, apart from a statutory provision to that effect, need not be discussed here.[27] Regardless of statutory mandate for notice and hearing, such would surely be given in order to cut off any question of invalidity for failure so to do, as well as to escape the criticism of conducting star-chamber proceedings.

4. *Distribution of allowable.*—The statutes, on the whole, provide in general language for distribution of the allowable for a field among the operators. Experience has shown that, because of great differences in physical conditions in fields, the legislature cannot write a proration formula which will fit each field. Whatever the legislature may set forth as a general standard, such as that the distribution must be "on a reasonable basis" (Texas act), or whether any general standard be given, it seems to be clear that the due process and equal protection clauses of the fourteenth amendment to the Constitution of the United States stand in the way of the enforcement of any distribution, though it be required by statute, which takes the property of one operator for the benefit of another. This general subject will be discussed in some detail under subsection 5 of section C which follows:

5. *Court review:*—Elaborate provision is usually made for court review. The method followed in Oklahoma, which authorizes the supreme court to act administratively, is, at least in theory, quite different from the practice followed in the other States. The usual

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[26] I Summers, The Law of Oil and Gas (perm. ed. 1938) sec. 106, note 35, p. 290, lists many cases.

[27] *Morgan* v. *United States*, 298 U. S. 468, 56 S. Ct. 906, 80 L. Ed. 1288, on second appeal 304 U. S. 1, 58 S. Ct. 773, 82 L. Ed. 1129, and on rehearing 304 U. S. 1, 58 S. Ct. 999, contains language which apparently supports either argument. See comment in Legal History of Conservation of Oil and Gas, a Symposium, p. 260, footnote 55.

method is to provide for a test of the validity of the law or any regulation thereunder by an injunction suit, with the trial being de novo. Most of the statutes provide that the statutes, and the rules, regulations, and orders are prima facie valid.

It appears that no statute specifically undertakes to declare what is the proper function of a court in testing the validity of a statute or an order thereunder. Lawyers are now debating the interesting question whether, in a case involving a claim of confiscation as being contrary to the due process clause of the fourteenth amendment to the Federal Constitution, the court should (a) make an independent determination of the facts as well as pass upon legal points, or (b) whether the court, with respect to fact issues, must sustain the action of the administrative agency if there be substantial evidence in support.

A very strong argument can be made in favor of the contention that the court is under the duty to make independent findings in a case involving the constitutional question of confiscation, whether or not the statute specifically requires such action of the court. A brief discussion of that subject will be found under subsection D of section V hereof.

C. SUBJECTS OF SPECIAL INTEREST

Most of the discussion of regulation centers around at least one of the following subjects: (a) rule of capture; (b) marked-demand limitation; (c) economic waste; (d) Optimum rate of flow; (e) distribution of allowable production among fields and among operators in a field; (f) proration; (g) pooling of tracts; and (h) unit operations. Each of these subjects will be briefly discussed, for the points to be made are applicable to either State or Federal statute.

1. *Rule of capture.*—No discussion of regulation of production can continue long without bringing in the "rule of capture." The "rule of capture" or "law of capture" is probably the most misused and misunderstood term in the entire phraseology of oil conservation. Nearly all evils are attributed to the rule of capture and it is the standard alibi which is relied upon to prove innocence of voluntary wrong-doing. Different persons not only have different concepts, but the same person in a short space of time will use the term with different meanings. Three conflicting concepts are stated:

(*a*) The "rule of capture" or the "law of capture" is a rule of law arising from ownership of property, or the right to produce oil and gas, by virtue of which an operator may drill and produce as he pleases, regardless of the effect on his neighbors, and with no liability whatever should he produce oil which was drained from under his neighbors' lands. In a broad sense, the rule of capture is used to mean a condition where there is no control by a regulatory agency, and particularly no proration or restriction on production.

Obviously, if the rule of capture means what has been stated in the preceding subparagraph, then conservation laws, particularly if proration take place, materially modify or annul the rule.

(*b*) The "rule of capture," under a strict, legal interpretation, is a rule of law (sometimes called rule of convenience) arising from ownership of property, or the right to produce oil and gas, by virtue of which an operator who drills on his own land, or land held under an oil and gas lease or other instrument, acquires title to the oil which he legally produces from the well, whether or not drainage takes place from surrounding properties.

Under this second concept, the rule of capture is really nothing more than a rule of convenience, largely for quieting title to oil because of the difficulty of deciding definitely the original source of that oil, or the difficulty of conducting operations so that no oil will be produced except that originally under the tract. The rule of capture, under the second concept, is not abrogated by conservation statutes and proration orders, no matter how rigid the restriction may be, because, whatever amount of oil is authorized to be produced under the order distributing the allowable for the field belongs to the operator who produces it, at least as far as his neighbors are concerned, and whether or not it be reasonably certain that some of the oil was drained from neighboring lands. Pooling orders do, in a sense, modify the concept just stated. The rule of capture does not, however, stand in the way of reasonable conservation measures.

(*c*) The "rule of capture" is sometimes used as the antithesis of "ownership in place."

Frequently, it is said that the field allowable should be distributed by taking into account the relative amounts of oil in place under each tract, being the ownership-in-place method, as distinguished from "rule of capture," which, in the sense used, really means on the per-well method, or per-well-potential method, by virtue of which one tract gets a higher relative allowable than another, though the reserves or oil in place be the same.

The origin and true meaning of the rule of capture, its bearing on conservation statutes and distribution of allowable, and the effect, if any, of the holding in any particular jurisdiction as to ownership of oil in place, are all discussed at some length in an article by the writer, prepared in 1935, for the meeting that year of the section of mineral law of the American Bar Association. The article was subsequently published in 13 Texas Law Review 391 (June 1935). There appears to be no need to digest the contents of the article, except to say that the second concept, stated above in paragraph *b*, was said to be the true one. The same general conclusions are stated in I Summers, the Law of Oil and Gas (perm. ed., 1938), sections 62 and 63.

Perhaps it would be well to add that the rule of capture is the same in all States, whatever the holding may be as to the ownership of oil in place, and it does not prevent the limitation of production, and, finally, it does not justify a regulation which, under similarity of conditions, gives one operator more than his fair share by causing reasonably avoidable drainage to his property.

2. *Reasonable market demand.*—These words are frequently misunderstood. They were not defined in the Oklahoma statute of 1915, where they first appeared. In due course, however, the words came to have a very definite meaning which may shortly be stated as being equivalent to "current consumptive demand."

In the early days of production control, 1930 and 1931, the regulatory agencies in Oklahoma, Texas, Kansas, and other States took the position that enormous amounts of oil were in storage, being far beyond any reasonable needs, and that this amount was increasing. It was argued that, even with the most modern methods of storage, there was considerable loss from fires, evaporation, leakage, and the like. All these conditions, it was said, brought about physical waste in material quantities.

Moreover, without production limitation, it was pointed out that many operators could not produce to capacity as some of their neighbors were doing, because the former had no market for all the oil, and could not store it unless pit or open earthen storage be used. The result was that those operators who had markets or storage produced to capacity, while their neighbor's wells were entirely shut in, or were producing much less than capacity, with drainage taking place. Obviously, all manner of complications arose, including what is generally termed "lack of ratable production."

The engineers testified that ratable production or withdrawals was to be distinguished from spotted or concentrated withdrawal; that, when ratable production existed, each operator or property produced relatively with others in the field, and there was a reasonably uniform use of reservoir energy, and a relatively uniform rise of any water table, with no abnormal differences in pressure and no heavy withdrawals in localized areas which tended to cause dissipation of energy and improper water encroachment. The lack of ratable production was clearly demonstrated as being one of the causes of undergound waste.[28] It appeared to be clear that, if it were possible to determine within reasonable limits the current consumptive demand for oil, then a restriction of production to that figure, followed by a proper distribution of the allowable, would tend to give each operator a market for his production, and would prevent further unreasonable additions to storage—all to the end of preventing physical waste above ground and of bringing about more ratable production, thereby decreasing the amount of underground waste.

Of course, in the early days of control there was considerable difficulty in finding with accuracy the consumptive demand, not only for the Nation, but for the individual States and areas. For a time, some of the regulatory agencies, in fixing allowables, gave too much reliance upon so-called nominations of purchasing companies. These nominations were merely estimates or statements of the amounts of oil which the companies thought they wanted to purchase for the ensuing period of 30 to 90 days. Obviously, if nominations alone were considered and followed, the purchasing companies could, in a sense, fix the allowables, making oil scarce or plentiful, and discriminating against fields or areas, by nominating much or little, as they pleased, to be purchased where they pleased. Before very long, it became apparent that factors other than mere nominations should be considered, such as (*a*) past experience, (*b*) whether storage of oil in certain areas was decreasing or increasing, (*c*) whether there was any difficulty in keeping wells connected to pipe lines or in getting connections for new wells, and (*d*) whether there was any reasonable need for all the oil nominated.

Beginning in 1933, the United States Bureau of Mines began to make estimates of current comsumptive demand. These estimates were used as a basis for regulations under the Petroleum Code formulated under the National Industrial Recovery Act, and were also transmitted to the various State agencies, to be considered by them with other evidence in determining the consumptive demand in each

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[28] See cases cited in notes 30 and 31, particularly the *Danciger case* (49 S. W. (2d) 837, 842 (Mar. 23, 1932)) and also *Peoples Petroleum Producers* v. *Smith* (1 F. Supp. 361, 363). Legal and engineering concepts of "ratable production" are given in paragraph 7 of "Legal Phases of Well Spacing." Proceedings of Eighth Mid-Year Meeting of the American Petroleum Institute, section 1, General (1938).

State. It was found that the United States Bureau of Mines could forecast with extraordinary accuracy the amount of gasoline and other petroleum products which would be consumed in the United States, and would be needed to meet export demands. These data made it possible to calculate the crude oil needed to supply this demand. The process used by the Bureau of Mines, already described in these hearings,[29] is fairly complicated, but in substance it is based upon the estimate of the number of motor vehicles which will be in use and the amount of gasoline they will consume, together with estimates of imports and exports.

Regulatory agencies have in general consistently undertaken to keep production from exceeding the current consumptive demand or reasonable market demand, declaring that this was a reasonable and proper method of preventing physical waste, both above ground and underground. The Supreme Court of Oklahoma, the Supreme Court of the United States, and the Court of Civil Appeals, Third District of Texas, have so held.[30] A three-judge Federal court in Texas, in the *Macmillan case*, held, in 1931, that limitation of production to reasonable market demand, at least in the East Texas field in view of the facts proved, had no reasonable relation to the prevention of physical waste. However, a similar three-judge court, in the second *Danciger case*, sustained in June, 1933, an order of the Railroad Commission of Texas covering the Panhandle field, on the ground that the order prevented physical waste, and it appeared that the production of the field has been limited to a figure found by the Railroad Commission of Texas to constitute the reasonable market demand for oil in the Panhandle field.[31]

It may be said, therefore, that the actual interpretation of "reasonable market demand" by the various State agencies, plus the decisions in the cases mentioned, plus long-continued usage in the industry, have brought about a meaning which is equivalent to "current consumptive demand."

The New Mexico statute passed in 1935 defines the words "reasonable market demand"—

> to mean the demand for such crude oil for reasonable current requirements for current consumption and use within or outside the State, together with the demand for such amounts as are reasonably necessary for building up or maintaining reasonable storage reserves of crude petroleum oil or the products thereof, or both such crude petroleum oil and products.

This statutory definition conforms to the meaning which was well established at the time the statute was passed. The Legislature of New Mexico thought it advisable, however, to define the term so that there could be no question as to the sense in which it was used.

It is frequently argued that limitation to reasonable market demand, even if that be taken to mean current consumptive demand, is, after all, nothing but a price-fixing or stabilization measure. A short answer to that contention is that the courts have held to the contrary, or at least have said that limitation to reasonable market demand is a proper and effective way to prevent physical waste above ground and underground; consequently in the absence of a statutory prohibition, such as once existed in Texas, a regulatory agency is fully justified as a waste-prevention measure in keeping production from exceeding the reasonable market demand. The courts say that the effect, if any, upon price by such a restriction is a mere incident to the legal exercise of police power to prevent physical waste, and the regulation is not void as a price-fixing scheme, simply because there may be an incidental effect upon price.[32]

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[29] Testimony by H. A. Breakey, November 7, 1939, especially that beginning at p. 180 of the record of the hearings as printed for the use of the Committee on Interstate and Foreign Commerce.

[30] *Julian Oil & Royalty Company* v. *Capshaw* (145 Okla. 237, 292 Pac. 841 (Oct. 14, 1930)): *Champlin Ref. Co.* v. *Okla. Corp. Comm.* (286 U. S. 210, 76 L. Ed. 1062, 52 S. Ct. 559 (May 16, 1932)); *Danciger Oil & Ref Co.* v. *R. R. Comm. of Texas* (49 S. W. (2d) 837 (March 23, 1932)).

[31] *Macmillan* v. *R. R. Comm. of Texas* (51 F. (2d) 400 (W. D. Tex., July 28, 1931)); *Danciger Oil & Ref. C* v. *Smith* (4 F. Supp. 236 (N. D. Tex., June 25, 1933)).

For that matter, even if the right to limit production to reasonable market demand should be exercised by any State agency by fixing an allowable below the true demand in an effort to raise prices, it is not at all certain that any such result would follow. Too many things could happen which would offset the effect of a temporary scarcity in that State. It may here be obesrved that, as a rule, the State commissions have been inclined to place the allowables too high, rather than too low.

Another point may be made. Experience has shown that whenever production materially exceeds the reasonable market demand, prices are likely to drop so low that wholesale abandonment of small wells takes place, and they must be plugged. The great reserve which would normally be produced by these wells is wasted, for the cost of redrilling the wells would not be justified. No one contends that national or State allowables should be unduly restricted with the hope that prices will go so high that no small wells will be abandoned. It is argued, however, that unrestricted or excessive production will cause premature abandonment of small wells, with consequent physical waste. It seems advisable to keep production within consumptive limits, giving the small wells a chance to produce their reserves.

There appears to be nothing unusual in authorizing limitation to reasonable market demand. There is nothing in 10 years' experience which shows that the regulatory agencies have consistently or even frequently abused the power to prevent production from exceeding reasonable market demand. It may be admitted, however, that, by concerted action of all the regulatory agencies, a temporary scarcity could be brought about by fixing inordinately low allowables, resulting in a species of price fixing, but it is reasonably clear that the danger of such action is not great enough to cause alarm or to justify Federal regulation. Such manipulation, if attempted for longer than a short period, or if attempted more than once or twice, would be met by political, legal, and economic forces sufficient to prevent a similar occurrence or any success for the unwarranted program.

3. *Optimum rate of flow.*—Within the last few years the suggestion has been frequently repeated that limitation of production to reasonable market demand should be discarded for a more scientific method which is termed optimum-rate-of-flow method. In support of the recommendation, it is sometimes argued that fixing allowables for fields at the market demand more frequently than not causes, rather than prevents, physical waste, inasmuch as the efficient point of production is frequently below the figure representing the market demand. It is argued that engineers ought to make extensive tests in each field, determining the most efficient rate of flow by taking reservoir pressure

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[32] Cases are cited in note 30 supra. See also *State* v. *Associated Oil Co.* (211 Cal. 93, 294 Pac. (2d) 717 (Dec. 3, 1930).

tests, water encroachment tests, gas-oil ratio tests, and the like, and then fix the allowable accordingly, irrespective of the market demand factor. It has been assumed by some of those who favor the optimum-rate-of-flow method that the total of the allowables fixed for the fields as a result of the suggested method will be substantially the same figure which represents the reasonable market demand for the Nation as now estimated by the United States Bureau of Mines. Apparently it has been assumed that the allowable production in some fields will be cut, being offset by increases in others, but that the total for the Nation will be about the same as under the present system. The scientific character of, and the benefits to be derived from, the new program have been repeated so many times that they are frequently accepted as having been fully established by the facts.

It appears that those proposing the optimum-rate-of-flow method make collectively several erroneous assumptions. In the first place, not one of the statutes requires that the allowable for any field be fixed at a figure which would represent the field's share of the State market demand, regardless of any other factors. The statutes simply say that production in excess of the reasonable market demand is wasteful, which, as we have seen, is unquestionably, a fact. In practice, regulatory agencies very frequently fix allowables for fields below what would be the figure if market demand only had been considered, taking the position that, if production should be permitted at the market demand figure, then underground waste would take place. Probably the most outstanding example of such a course is the East Texas field. For years, the allowables for the field have been fixed by consideration of reservoir pressure declines, with little or no attention being paid to the market demand factor. On the other hand, there are fields in Texas, which, considering underground conditions alone, could produce much more oil than they are permitted to produce. Conroe and Yates are outstanding examples. If the optimum-rate-of-flow method should be used, the allowables from Conroe and Yates would be materially increased. The Railroad Commission of Texas has, however, determined for Conroe and Yates the share of each in the State's market demand; and, as a consequence of applying the market demand factor, the fields have been cut below the figure representing the maximum which they could produce without underground waste, provided, of course, ratable production would continue in the face of inability of the market to absorb the additional oil produced at the optimum rate.

It should here be observed that little or no waste takes place in Conroe and Yates, though reduced below the maximum point which could be produced without causing underground waste. If any waste occurs, it has been considered to be less than that which would be caused if these two fields, as well as all other fields in the State, should produce in excess of the reasonable market demand.

Theoretically, in each field, the optimum-rate-of-flow figure or the market-demand figure is selected, whichever may be the lower. Within reasonable limits, such has been the practice in most instances.

The proponents of the optimum-rate-of-flow method apparently assume that all would be well if each field throughout the Nation should be fixed at the maximum which it could produce without causing physical waste underground. No one has published any figures which tend to prove such a statement. It may be that the assumptions are justified, and the use of the optimum-rate-of-flow method would be as satisfactory or even better than the present method. On the other hand, it may be that, under application of the optimum-rate-of-flow method, the total production would be far in excess of the reasonable market demand. If so, physical waste above ground and underground would take place for the reason that there would be excessive and wasteful storage or else the operators in each field could not continue to produce at the ideal rate of flow, having insufficient storage, insufficient markets, and insufficient pipe-line connections. Ratable production, which is a prime factory in preventing waste, would shortly be upset, and, though there might be allowables and proration schedules which would permit ratable production at not to exceed the optimum figure, the facts would be that the producers could not follow the schedules.

Moreover, the proponents of the optimum-rate-of-flow method must necessarily assume that, after the scientific maximum for each field had been determined, the oil available for the markets would be of the right grade and character, and would be located at the proper places. It is not clear that such assumptions are justified. For instance, as an assumption only, the allowables for some fields in New Mexico, the Panhandle, and west Texas might be increased enormously, thus producing for the market a large amount of sour oils or oils with a sulfur content. On the other hand, allowables for fields in the Gulf coast of Louisiana and Texas, which are close to tidewater and which have different types of desirable oils, might be greatly decreased. If such should be the facts, then the whole transportation and marketing set-up would likely be seriously disturbed, having little or no relation to normal markets, refinery centers, adequate transportation facilities, or the like.

Beyond doubt, the regulatory agencies and operators should with some precision determine the maximum rate at which a field could produce without causing physical waste, and should take great care to see that the field should not be permitted to produce in excess of that figure, unless unusual circumstances existed. It has not been established that such procedure has not been followed as a general rule. Regulatory agencies should, and frequently do, place the allowable for a field below the optimum-rate-of-flow figure whenever it is necessary so to do in order to prevent production in excess of the reasonable market demand.

It would be interesting to know what some of the proponents of the optimum-rate-of-flow method would recommend if, following the program, the production for the Nation should be 25 percent above the present level, or, conversely, if the production should be 25 percent below the present level. Serious economic disorders, including changes in prices, might occur in either instance, and surely physical waste would take place if production should exceed by 25 percent the present figure which represents consumptive demand.

In the light of known facts, there appears to be no need to discard consideration of reasonable market demand, adopting in lieu thereof optimum-rate-of-flow, and clearly the failure of State regulatory agencies to make such a change at this time does not warrant extensive regulation by the Federal Government.

4. *Economic waste.*—Economic waste, as that term is used in conservation statutes, or in connection therewith, has not been defined

in any conservation statute. In a broad sense, economic waste means failure to obtain the maximum benefit from a commodity, or the employment of a commodity to an inferior use. For instance, the use of derricks made of silver instead of wood or steel, or the drilling of two wells when one would be enough to drain efficiently the tract, or the use of high-grade oils to settle dust on roads when low-grade oils would do just as well are illustrations of economic waste. Physical waste, to the contrary, carries with it the concept of loss without any use whatever. In a sense, all physical waste is economic waste. Obviously, economic waste is not necessarily physical waste. In the early days of proration, many persons, including for a time some of the Federal judges, took the position that limitation of production so that it would not exceed the reasonable market demand had to do with economic waste as distinquished from physical waste.[33]

We have already seen that it is now everywhere recognized that production in excess of reasonable market demand inevitably causes physical waste, and several courts have so held, including the Supreme Court of the United States, the Supreme Court of Oklahoma, and the court of civil appeals, third district of Texas.[34]

Frequently, in discussing conservation practices, waste is classified as "physical waste" and "market demand waste." Always the person who undertakes to use the term "market demand waste," as distinguished from "physical waste," has difficulty in explaining the distinction whenever called upon to be precise in his definitions or use of terms. Almost always, when the words "market demand waste" are employed, there is a misunderstanding of the actual facts and practices.

It should also be observed that not a single State statute prohibits a regulatory body from considering economic waste, or even from controlling production for the very purpose of preventing economic waste. Indeed, some of the statutes, such as those of Oklahoma and Kansas, specifically provide that the waste which is prohibited shall include economic waste. True it is that the Texas act of 1929, and the Texas act of 1931, provided that the waste which was prohibited should not be construed to mean economic waste; however, the Legislature of Texas in 1932 amended the law by eliminating such language, and the existing statute does not in any way prohibit the consideration of economic factors or even the prevention of economic waste. It may be argued that, as the Texas statute now stands, "waste" means economic waste as well as physical waste.

Obviously, economic conditions and economic factors must be considered by the regulatory agencies in writing their orders as a part of the program to prevent physical waste. There is nothing abnormal in such procedure, and no unwarranted assumption of power.

Moreover, whether or not a statute specifically authorizes or directs the regulatory agency to prevent economic waste apart from physical waste, no statute authorizes, or probably could legally authorize, regulation which unnecessarily causes economic waste. Frequently, it is said that the regulatory agency has nothing to do with economic waste, and is not interested in drilling or operating expenses, and deals solely with physical waste. Usually that statement is made when unnecessary wells are under discussion, and the official is seeking to defend a policy which causes the drilling of unnecessary wells, or fails to give a proper share of the allowable for wells already drilled to a density sufficient to drain the lease. This is another instance of loose language, part truth and part foolishness. This much is certain: A regulatory agency cannot legally require unnecessary expenditure as a prerequisite to granting an operator an allowable representing his fair share. For instance, having drilled enough wells to produce efficiently the oil under a tract, the administrative agency cannot insist that he drill more wells before getting a proper allowable. Such was the holding in the *Rowan case*.[35]

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[33] *Macmillan* v. *R. R. Comm. of Texas* (51 F. (2d) 400 (W. D. Tex., July 28, 1931)). But see cases to contrary cited in notes 30 and 31 supra.

[34] See cases cited in footnote 30 supra.

5. *Proration.*—The term "proration," like the other terms discussed herein, is frequently used with varying concepts, thus making it difficult to understand at times what meaning is intended to be conveyed. For instance, "proration" is frequently used as the antithesis of "rule of capture." Many times it is used as meaning that the production of a State must be limited to the figure estimated by the United States Bureau of Mines to be that which will supply the reasonable market demand for the State. Again, proration is used as synonymous with any regulation under conservation statutes. Frequently, reference is made to proration statutes or proration laws when the reference should be to conservation laws. Confusion often results under these circumstances.

Proration really means a division. For instance, when the top allowable for a field is fixed, the amount is divided or allocated or prorated among the operators in the field, each receiving a pro rata part. Obviously, the division may be made by the use of one or more of a great variety of factors, such as flat well basis, potential, acreage, bottom-hole pressure, sand thickness, or the like. Regardless of the factors which are used, and whether or not the division is a fair one, the allowable production is divided or prorated among the operators.

6. *Distribution of allowable to States and among the fields and operators therein.*—Considerable interest has been shown in the methods used by State regulatory agencies in determining the top allowable for the State as a whole, and the top allowable for each field in the State, as well as in the method of distributing the field allowable among the operators therein. In the Mid-Continent States which have comprehensive conservation statutes, the capacity production of the wells in each State is much larger than the consumptive demand, making it necessary to limit the amount of oil which may be produced. From time to time, usually once a month, public hearings are had as a basis for deciding what regulations and limitations are necessary.

In connection with the fixing of a State allowable, the regulatory agency has before it the past history of production in the State, whether storage is increasing or decreasing, nominations of purchasers, and many other factors in addition to the estimates of the United States Bureau of Mines with reference to total consumptive demand for the United States, and the estimated consumptive demand for oil from the State. The estimates or forecasts of the United States Bureau of Mines as to the Nation's consumptive demand is based primarily upon the gasoline consumption, which, as stated above, can be estimated with great accuracy. Normally, if enough oil is refined to meet the demands for gasoline, enough byproducts are produced to take care of the demand for other commodities made from oil; though the increasing use of furnace oils, and the increasing production of distillates and natural gasoline, may cause further revision of the forecasting technique.

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[35] *Rowan & Nichols Oil Co.* v. *R. R. Comm. of Texas* (28 F. Supp. 131 (W. D. Tex., June 12, 1939)).

Some difficulty arises in estimating the portion of the total demand which is applicable to each State. The procedure of the United States Bureau of Mines is somewhat complicated, but essentially it is as follows: Data are obtained showing changes in storage, movements of oil and products in and out of various districts, including exports and imports. Even if it were possible for me to do so, there is no need to try to explain the entire process used by the Bureau. It has already been detailed by Mr. Breakey who makes the forecasts.[36] It is sufficient here to say that, based upon past history of movements of oil and products in and out of States, the Bureau apportions the Nation's allowable among the States, increasing or decreasing the prior estimate of oil needed from each State, depending upon whether the actual movements show that too much or too little oil was being produced to meet the demand applicable to each State.

It is my understanding that the forecast which is made for each State is really the result of a mathematical calculation based primarily on movements of oil and products, and with no discretion being exercised either to increase or decrease a State's portion because of the existence of facts which might be taken into account if so-called "equity" should be done. It follows, of course, that, should a regulatory agency suddenly increase materially the allowable for that State, and the oil should move freely in commerce instead of going into storage, then such facts would be reflected in reports reaching the United States Bureau of Mines, and in due course the Bureau would increase its estimate of the figure representing that State's share in the market demand for the Nation. Obviously, States which are inclined to increase unduly their allowables are likely to obtain some advantage over States which, in the common good, do not try to obtain an unfair share of the markets by similar tactics. Under the present system, there is a tendency for each State to try to increase its share of the national allowable at the expense of other States. In a sense, there is keen competition among the States, thereby reducing the probability of a total limitation to a figure below the normal consumptive demand.

It should be made clear that the States are not bound in any way to follow the forecasts or estimates made by the United States Bureau of Mines. In view of the method which is employed in making the estimates, it is right that some discretion should somewhere be exercised in order to fix the proper allowable for a State, with consideration of all applicable factors. Under the existing system, this discretion is exercised by the regulatory agency. It appears, therefore, that sometimes the allowable for a State is above, and sometimes below, the figure announced by the United States Bureau of Mines; however, on the whole it would appear that, except under rather unusual conditions, the States have fixed allowables quite close to the forecasts of the Bureau.

It has been suggested that the method used by the United States Bureau of Mines should be changed so that the Bureau would include other factors in making its forecasts, such as taking into account whether a State has unfairly increased its allowable in order to get an undue share of the markets, or whether one State is producing a greater share of its reserves than another. It is very doubtful whether such a change would be wise, at least unless rather definite standards are set up to limit the range of the discretion to be exercised. By far the better argument can be made to support the opinion that it is wiser to leave the discretion in the State agencies, continuing the present program.

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[36] Record of hearing November 7, 1939, as printed for the use of the Committee on Interstate and Foreign Commerce p. 180, et seq.

At any rate, after all facts are considered by a State regulatory agency, it finally reaches its conclusion as to the State allowable and the allowable for each field. Theoretically, perhaps, the State allowable is first determined, and is then allocated among the fields; but, no doubt, more often than not the allowables for fields or areas are first determined which finally constitute the total allowable for the State. It probably is immaterial whether the start is made at the top or the bottom, for adjustments must necessarily be made. So far, no one has ever worked out any satisfactory formula for distribution of the State allowable among the fields. The statutes which cover the subject may use different language, but, in the end, about the only standard which has been expressed is that the distribution among the fields shall be on a reasonable basis without discrimination. Obviously, there are hundreds of facts which must be considered in determining whether discrimination exists. It is clear that geographical location of fields, the character of the oil, the nearness to refineries or tidewater, the transportation facilities, and many other facts properly enter into the amount of production which should be properly allocated to each field or area.

Those who argue that demands or nominations of purchasers in each field should determine the market demand for the field are met with the reply that such a system would unquestionably result in selective buying, making it possible for the purchasers, by nominating high in some fields and low in others, to obtain an undue advantage for themselves or for others, to say nothing of being able, in some instances, to affect materially the price of oil and the values of properties in certain areas or fields. It seems sufficient to repeat that all manner of complications enter into allocation of the State allowable among the fields. The present system, which is in a large sense a mere matter of trial and error, adjustments being made from time to time, has worked fairly well. Sooner or later someone will be smart enough to suggest a better system. No witness in support of Federal regulation appears to have done so.

Having fixed an allowable for a field which is less than its total productive capacity, the regulatory body is then faced with the problem of prorating the allowable among the producers. And a real problem it appears to be to one who does not know that many of the complications in which the regulatory agencies find themselves with respect to proration of field allowables are self-induced. Too many of these agencies have been unable to withstand at times the opportunity to exercise broad discretion in a manner to take, by unfair proration, the property of one operator for the benefit of another. Statutory proration formulas, as a cure for these discriminatory actions, would not be successful because of the impossibility of writing one formula which will apply to all conditions. Necessarily the statutes can do little more than announce reasonableness as a standard. In the footnote,[37] quotations from some of the statutes are given. A great variety of methods has been used in making distribution under these statutes. Sometimes distribution is on a flat per well basis; sometimes on potential, regardless of drilling density; sometimes 100 percent on acreage; sometimes on a combination of acreage and potential, or acreage and bottom-hole pressure. The list could be made extremely long.

Whatever the statute may provide, and whatever formula the regulatory agency may adopt, it is reasonably clear that one fundamental must be met, otherwise the distribution would not be legal. Without trying to be overprecise, it may be said that distribution must be such that there will be no reasonably avoidable drainage between competitive properties, which is not offset by counter drainage. Stated differently, if it be assumed that all the operators have drilled up their properties, then the order must be such that each operator will have a reasonable opportunity to produce substantially the amount of oil and gas under his tract, subject always to the reasonable necessities for prevention of waste.

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[37] ARKANSAS: "The commission shall prorate or distribute the allowable production among the producers in the pool on a reasonable basis so as to prevent or minimize reasonably avoidable drainage from each developed unit which is not equalized by counter drainage, and so that each producer will have the opportunity to produce or receive his just and equitable share, as above set forth, subject to the reasonable requirements for the prevention of waste." In a prior section of the act, reasonable share is defined in substance as that part of the allowable for the pool which is substantially in the proportion that the recoverable oil in any tract bears to the recoverable oil in the entire pool.

KANSAS: "In prorating the production allowed to each pool among the wells therein, the commission shall take into consideration, among such other factors as it may find proper, and give due and proper weight to: (*a*) the productivity of each such well as determined by such reasonable method as the commission shall adopt for the pool; (*b*) the acreage of each well owner which is reasonably attributable to each of his wells; and (*c*) the efficient utilization of the reservoir energy in the pool."

LOUISIANA: "The commissioner of conservation shall allocate, distribute, or apportion the allowable production from such common source of supply among the various producers on a reasonable basis, and shall limit the production of each producer to the amount allocated or apportioned to such producer.

"Such allowable shall afford to the producer of each property in a common source of supply the opportunity to produce his just and equitable share of the oil and gas so far as can be practicably obtained without waste, and for this purpose to use his just and equitable share of the reservoir energy.

"The commissioner of conservation is authorized to ascertain the productivity of all property in a common source of supply for the purpose of fixing the allowable production as hereinabove provided, and in so doing shall give due consideration to the productivity of the wells located thereon, as determined by open-flow tests, bottom-hole-pressure tests, or any other practical method of testing wells, as well as surface acreage included in such common source of supply, and such other factors as may be pertinent thereto."

MICHIGAN: The supervisor "shall prorate or distribute on a reasonable basis the allowable production among the producing wells in the field or pool, so as to prevent or minimize reasonably avoidable drainage from each developed area which is not equalized by counter drainage. The rules, regulations, or orders of the supervisor shall, so far as it is practicable to do so, afford the owner of each property in a pool the opportunity to produce his just and equitable share of the oil and gas in the pool, being an amount, so far as can be practicably determined and obtained without waste, and without reducing the bottom-hole pressure materially below the average for the pool, substantially in the proportion that the quantity of the recoverable oil and gas under such property bears to the total recoverable oil and gas in the pool, and for this purpose to use his just and equitable share of the reservoir energy."

MISSISSIPPI: "The board shall have the authority to make proration orders with respect to oil wells located in a common source of supply, if necessary, in accordance with the provisions of this section." The language quoted was inserted in a section dealing primarily with the proration of gas wells. It is provided that the distribution shall be "on a reasonable basis," and, as otherwise provided in the section Some of the provisions applicable to gas are not applicable to oil, so the statutory provision for oil proration is not entirely clear.

NEW MEXICO: "The Commission shall prorate or distribute the allowable production among the producers in the field or pool. Such proration or distribution shall be made on a reasonable basis. The rules, regulations or orders of the commission shall, so far as it is practicable to do so, afford to the owner of each property in a pool the opportunity to produce his just and equitable share of the oil and gas in the pool, being an amount, so far as can be practicably determined, and so far as such can be practicably obtained without waste, substantially in the proportion that the quantity of the recoverable oil and gas under such property bears to the total recoverable oil and gas in the pool, and for this purpose to use his just and equitable share of the reservoir energy."

OKLAHOMA: "Whenever the full production of any common source of supply of oil in this State can only be obtained under conditions constituting waste, then any person having the right to drill into and produce oil from any such common source of supply may, except as otherwise authorized and/or in this act, provided, take therefrom only such proportion of all oil that may be produced therefrom without waste as the production of the well or wells of any such person bears to the total production of such common source of supply. The commission is authorized to regulate the taking of oil from any or all such common sources of supply within the State of Oklahoma so as to prevent the inequitable or unfair taking from any common source of supply, and to prevent unreasonable discrimination in favor of any such common source of supply against another."

Other provisions of the act, such as the pooling provision, apparently modify the language quoted so that a small tract or a densely drilled tract will not be given undue advantage.

TEXAS: "The commission shall distribute, prorate, or otherwise apportion or allocate, the allowable production among the various producers on a reasonable basis."

Clearly, the owner of each tract of land, subject to the necessities of waste prevention, has the right to produce the oil and gas under his land without being required to drill unnecessary wells. This right to drill and produce the oil is a property right guaranteed by both State and national constitutions. The orders of the regulatory agency distributing the allowable production must, therefore, be such as will protect the property rights of the various owners. The rights and privileges which these various owners have must necessarily be adjusted and protected, which is all that is meant when the argument is made that it is a duty of the regulatory agency to adjust and protect the rights, or correlative rights, of the common owners in an oil and gas pool, or the owners of lands in a common source of supply.

Beyond doubt, many instances could be cited showing that highly discriminatory methods of distribution have been used so that some operators have been permitted to produce more, and others less, than their fair shares. On the other hand, progress has been made in all States with respect to methods of proration. It was a very natural thing that in the beginning the potential factor was given great weight, if not taken as the sole factor, even where there was great disparity in drilling density. Oil men had for years drilled and produced as they pleased, and it was the custom to treat potential as a very definite index of the amount of oil which would be recovered from the well, whether it was on a 1-acre tract or a 10-acre tract. When, however, regulatory agencies stepped in and tied the hands of operators so that they could not drill and produce as they pleased, it necessarily followed that the agencies had to protect operators against reasonably avoidable adverse drainage, for the operators were not free to use their own judgment and abilities in an effort to protect their properties.

The advent of conservation and proration brought about intensive scientific studies of oil production, of reservoir contents, and of the behavior of reservoir fluids. Tremendous strides have been made along scientific lines, as will be detailed by others. For instance, the invention of instruments for measuring accurately reservoir pressures was of great value, for obviously oil and gas move from high-pressure areas to low-pressure areas; consequently, when pressures are known, the direction and degree of movement can be determined with reasonable accuracy. Furthermore, having information as to pressures, the production from wells or areas can be increased or decreased in order to minimize or even change the direction of migration. Again, the technique of taking cores or samples of the sand, and of measuring with considerable accuracy the sand thickness, saturation, permeability, and other factors have made it possible to obtain knowledge of underground conditions and to control reservoir reactions following production to a degree which was unheard of in 1930.

All of which is to say that, though many mistakes have been made in the past in allocation of production which resulted in discrimination, and even though many instances of discrimination can still be shown in existing orders, it is fair to remember the great progress which has been made, and it is not unreasonable to think that most of the discrimination which now exists will in time be removed, even if it be necessary for the courts to play their part in preventing continuation of the existing discriminations. Several recent cases, establishing rights of operators and regulatory agencies under the State statutes which were involved, are great aids to conservation, and to a solution of some of the problems which have arisen, especially with respect to unnecessary wells and the distribution of allowable.[38]

Finally, it should be said that a distribution formula proper for one field may be wholly inappropriate in another. The use of one formula for all fields would certainly not bring about the results which ought to be obtained—prevent reasonably avoidable drainage between competitive tracts, not offset by counter drainage.

7. *Pooling to Prevent Confiscation of Small or Irregularly Shaped Tracts.*—As we have seen, there is little disagreement among engineers on the point that ratable production should be sought, having a definite bearing on the efficient operation of a pool. It is also well established that relatively uniform spacing is desirable, if for no other reason than that it simplifies the problem of obtaining ratable production. Some of the statutes specifically direct the administrative agencies to do whatever is reasonably necessary to prevent the drilling of unnecessary wells. These statutes provide for uniform spacing and for drilling or proration units.[39] Such a unit is defined in section 14 of the Arkansas statute as being—

> the maximum area which may be efficiently and economically drained by one well.

It seems logical to say that, if it reasonably appears that one well will drain a given area, say 40 acres, the owner of the 40-acre tract with a well thereon ought to get an allowable appropriate for the 40-acre tract, and that his allowable should not be increased should he drill three or four wells on the tract, each being unnecessary. On the other hand, if one will well drain a given area, say 40 acres, then, should an operator have only a 10-acre tract, it seems illogical to require him to drill a well on the 10-acre tract merely to produce an allowable appropriate to the tract, when such well is capable of draining as much as 40 acres. Moreover, it seems illogical and discriminatory to permit such operator to drill a well on a 10-acre tract and have the same allowable as his neighbor with a well on 40 acres. Obviously, tracts which cannot be drilled in conformity with a uniform spacing plan, or in conformity with a program of drilling or proration units, present complications.

For many years, operators, regulatory bodies, and courts were greatly influenced by customs of long standing under which an operator drilled and produced as he pleased, and successfully asserted the right to drill on a small tract or to great density on large tracts, regardless of the fact that he might drain neighboring tracts or cause unnecessary wells to be drilled on neighboring tracts in order to secure protection against undue drainage. It is not surprising that these customs influenced early administration of conservation laws, resulting in many exceptions to well-spacing programs. These exceptions, combined with a proration formula which gave great value to potentials or to mere wells, brought about many discriminations. Gradually, however, progress was made toward taking care of the small or irregularly shaped tract, and toward the elimination of discrimination when unnecessary wells are drilled, with New Mexico making a valuable contribution by its law specifically authorizing compulsory pooling, though the law did have an unfortunate proviso which virtually annulled the compulsory feature. Oklahoma followed with a spacing and pooling law; also Louisiana. Best of all was Arkansas which authorized compulsory pooling, being an improvement over the New Mexico law, as will be explained.

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[38] *Patterson* v. *Stanolind O. & G. Co.* (182 Okla. 155, 77 Pac. (2d) 83) (Mar. 11, 1938), appeal dismissed Jan. 3, 1939 (305 U. S. 376); *Croxton* v. *Okla. Corp. Comm.*, — Okla. — (97 Pac. (2d) 11) (Nov. 21, 1939); *Rowan & Nichols Oil Co.* v. *R. R. Comm. of Texas* (28 F. Supp. 131) (June 21, 1939), affirmed on appeal (107 F. (2d) 70, C. C. A. 5th, Nov. 3, 1939).

[39] Arkansas, Sec. 14 of Act No. 105 of 1939; Louisiana, sub par. (6) of Sec. 6 of Act No. 225 of 1936; Michigan, Sec. 13 of Act No. 61, P. A. 1939; New Mexico, Sec. 12 of c. 72 of Acts of 1935; Oklahoma, Acts of 1935, c. 59, amending Sec. 4 of the Acts of 1933, c. 131.

Let us assume a field in which one well will drain efficiently as much as 40 acres, and that the regulatory agency under New Mexico law issues an order providing for spacing of wells on not less than a 40-acre pattern, and also providing for a proration unit of 40 acres. If all operators had 40-acre tracts conforming exactly to the 40-acre unit, then each operator would, in conformity with the regulations, drill approximately in the center of the unit, and there would not be an unnecessary well in the entire field. Distribution of the allowable would be made upon a formula which would prevent reasonably avoidable drainage between competive units. Such a situation would be close to the ideal. However, let us now assume that, within the limits of a unit, there is a tract of 30 acres and another of 10 acres. Obviously, the uniform pattern would be upset if each of the owners of these two tracts drilled substantially in the center of his tract. Furthermore, there would be at least one unnecessary well, for, under the facts assumed, one well will efficiently drain as much as 40 acres. Let us also assume that each well costs $50,000 to drill, and that the recovery per acre will be 5,000 barrels of oil worth $1 a barrel. Under the New Mexico law, should the owners of the two tracts not make a pooling agreement, the commission would, after a hearing, issue a pooling order. Let it be assumed that the order authorizes one of the operators to drill a well in the center of the 40-acre unit, each operator to pay for the expense of drilling and operating in proportion to the acreage owned, each getting a similar share of the production allowed for the whole unit. Should the operators elect to abide by the commission's order, all would be well. However, let us next assume that the owner of the 30-acre tract refused to pool, insisting on the right to drill, proving that no waste would take place should he do so.

Under the New Mexico statute, a permit to drill would have to be issued to the owner of the 30-acre tract who would then drill a well at a cost of $50,000. He would get thirty-fortieths of the amount which would be allowed to the entire 40-acre unit, being in proportion to the acreage which he owned therein. Let it be assumed that, even though he paid the entire expense of drilling and operating the well, he could still make a profit though limited to an allowable representing thirty-fortieths of the allowable to the 40-acre unit. In a way, this operator could not claim any confiscation. Let us see, however, what would happen to the owner of the 10-acre tract.

Inasmuch as the owner of the 30-acre tract had refused to pool, the owner of the 10-acre tract would in turn be required to spend $50,000 to drill a well on his 10-acre tract. His share of the allowable production would be 10-fortieths of the total allowable for the unit; however, since the ultimate production from the 10-acre tract would be 5,000 barrels per acre, the ultimate production would be only 50,000 barrels of oil worth $1 a barrel; consequently, having spent $50,000 to drill the well, and having received in return over a period of years only $50,000, the owner of the 10-acre tract would actually lose money, represented by operating expenses, interest, taxes, and similar expense.

If the New Mexico law were the same as the Arkansas law, then, under the facts assumed, the regulatory agency could have enforced pooling so that only one well would be drilled on the 40 acres. Everybody would be better off than under the situation just outlined. The same amount of oil would be produced from the 40 acres, whether one or two wells were drilled; consequently, the income to the landowners would be the same in either instance. The losers would be the operators, for they drilled an unnecessary well costing $50,000, and they doubled necessary operating expense. It is also clear that, under the law as it exists in New Mexico, and under the assumed facts, the owner of the 30-acre tract may have refused to pool because he knew that the owner of the 10-acre tract could not afford to drill if limited to a proper allowable; consequently, the owner of the 30-acre tract would be able to drain eventually the oil from under the 10-acre tract. It follows that the New Mexico statute, instead of protecting, as it was intended to do, the owner of a small tract, may make it possible to bring about confiscation. The Arkansas statute gives the regulatory body the power to enforce pooling and thereby prevent unnecessary wells and the confiscation of small tracts. Under Arkansas law, the small-tract owner is not at the mercy of the owner of the larger tract.

There is little doubt with respect to the validity of pooling statutes. Cases and articles in support are cited in the footnote.[40] Furthermore, unless a statute sets forth the procedure or limits of power to be exercised in connection with pooling, or clearly prohibits pooling, it is likely that the right to require compulsory pooling is implied, being a reasonable method of preventing waste and avoiding confiscation.[41]

8. *Unit operations.*—The pooling of small or irregularly shaped tracts in order to make effective a uniform spacing program, or to prevent drilling of unnecessary wells, though it be a joint venture as described above, is quite a different type of regulation from that which is meant by the use of the words "unit operations." When the term "unit operations" is used, it is intended to convey the idea of operating an entire field, or at least a large portion thereof, as a unit, or as if owned by one person.

Much has been written about the value of unit operations. It is argued that many of the evils arising from the usual method of operations are obviated under a unit-operation program. It is said, for instance, that the cost of operations will be reduced; the wells will be drilled and operated solely with efficiency of recovery in view; and, consequently, ultimate recovery will be higher under unit operations than if the usual procedure under conservation statutes should be followed, and even though the regulation be of high order. It is probably true that some of the argument is sound. Theoretically, unit operation is ideal, but it is quite another thing to translate that ideal into actual practice.

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[40] Veasey, Compulsory Pooling of Adjacent Tracts into Drilling Units to Conform to an Established Well Spacing Plan, a paper read before the Section of Mineral Law (A. B. A.) at its Cleveland meeting. 1938; Walker, The Problem of the Small Tract Under Spacing Regulations, 90 Oil Weekly, No. 8, p. 22, Aug. 1, 1938, and 37 O. & Gas J. No. 13, p. 41, Aug. 11, 1938, and Tex. L. Rev. (Tex. Bar Ass'n. Number, Oct. 1938) p. 157, and also at page 358 of Record of November hearings before this committee (1939) printed for the use of the Committee on Interstate and Foreign Commerce; Legal Subcommittee of Am. Pet. Inst., Legal Phases of Well Spacing, and Engineering Subcommittee of Am. Pet. Inst., Engineering and Economic Phases of Well Spacing (1938), Proceedings of Eighth Mid-Year Meeting, A. P. I., Section 1—General, p. 8; German, Compulsory Unit Operation of Oil Pools, 17 A. B. A. J. 393 (June, 1931) 20 Cal. L. Rev. 111 (Jan., 1932); Summers, Legal Rights Against Drainage of Oil and Gas, 18 Tex. L. Rev. 27 (Dec., 1939); Ely, The Conservation of Oil, 51 Har. L. Rev. 1209, 1235 (May, 1938); *Marrs* v. *City of Oxford*, 24 F. (2d) 541 (D. Kan. Feb. 27, 1928), affirmed 32 F. (2d) 134 (C. C. A. 8th, Mar. 25, 1929), writ denied 280 U. S. 573 (Oct. 21, 1929); *Tysco Oil Co.* v. *R. R. Comm.*, 12 F. Supp. 195 (S. D. Tex., Sept. 24, 1935) and id. at 202 (Sept. 25, 1935); *Patterson* v. *Stanolind O. & G. Co.*, 182 Okla. 155, 77 Pac. (2d) 83 (March 11, 1938), appeal dismissed Jan. 3, 1939, 303 U. S. 376, with per curiam opinion; *Croxton* v. *Oklahoma*, — Okla. —, 97 Pac. (2d) 11, (Nov. 21, 1939.

[41] See articles cited in note 40 supra, especially Legal Phases of Well Spacing, in Proceedings of Eighth Mid-Year meeting of Am. Pet. Inst., Section 1—General, p. 8, at 11 (Par. No. 20); and Walker, The Problem of the Small Tract Under Spacing Regulations, Tex. L. Rev. (Tex. Bar Assn. Number, Oct., 1938) 157, at 168, and at 362 of Record of November hearings cited in note 40.

Unit operations may roughly be divided into two types: (1) voluntary, and (2) compulsory. Voluntary unit operation takes place whenever the interested person in a field makes an agreement to that the entire field or a large part thereof, irrespective of property lines, may be operated as a unit in accordance with the program outlined in the agreement. There are several agreements of this type, notably those with respect to Kettleman Hills, in California, and Van, in Texas.[42] Similar agreements should be encouraged. It is observed, however, that those unit operations have been brought about by voluntary agreements. The interested persons, after the usual give-and-take which precede a contract, finally decided how the production should be divided, how expenses of drilling and operating are to be paid, and the like.

There are two main reasons why unit-operation agreements are not entered into more frequently. First, there is the extraordinary difficulty of bringing together into an agreement all of the lessors and all of the lessees of a field or pool, particularly since, to be of much value, the agreement must be made very shortly after the field is first discovered and long before it has been definitely outlined and the true value of its properties are ascertained. Second, there is the fear whether unfounded or not is unimportant, that the State or the Federal Government will bring an antitrust suit claiming that the agreement is not primarily for the purpose of operating the field efficiently and cheaply in accordance with the best engineering practices, and in full compliance with the strictest of conservation laws, but, to the contrary, is a scheme to control production or to raise prices.

In some of the States there are laws specifically authorizing the making of unit-operation agreements, which, when approved by some State agency, will protect the parties to the contract against any prosecution under antitrust or monopoly laws.[43] No doubt, the statutes of all the States ought to contain such a provision; and a similar provision should be passed by the National Congress. However, as pointed out in testimony given in these hearings, regardless of laws specifically authorizing approval of unit-operation agreements, a very limited number have been entered into and for the good reason that the owners of the oil land, frequently large in number, simply cannot agree upon terms. If they could, no doubt the regulatory agency would be glad to issue a regulation which would follow the unanimous recommendation of the interested persons, subject to necessary changes for waste prevention.

Turning now to compulsory unit operation, very different questions arise. No State has yet passed a law authorizing the regulatory body to require unit operations. Texas has even gone so far as to write into its primary conservation act the following clause:

> However, it is not the intent of this act to require repressuring of an oil pool or that the separately owned properties in any pool be unitized under one management, control, or ownership.

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[42] Lindsly and Dahlgren list a number of pools which have been unitized in some form, at p. 499 of record of hearings (November 1939) before this subcommittee as printed for use of the Committee on Interstate and Foreign Commerce, admitting that the total number is relatively small.

[43] Arkansas, par. C of sec. 15 of Act No. 105 of 1939; California, sec. 8c Act 4916 as finally amended by Act of June 19, 1937, Laws of 1937, p. 1412; Kansas, sec. 3 of S. B. 185 passed in April 1939; Mississippi, sec. 40, c. 117, Acts of 1932; New Mexico, sec. 12 of Acts of 1935, c. 72.

It should be added here that apparently this clause deals solely with unit operations as commonly understood, as distinguished from a regulation providing for the pooling to prevent confiscation of small or irregularly shaped tracts, as discussed above.[44]

It is freely admitted that unit operation of a field is a splendid thing. However, complications arising from compulsory unit operations are considered to be almost unsurmountable. As observed above, if unit operation of a field is to be effective, the program should be formulated in the early stages of its history. Obviously, if the field is already drilled up, or substantially so, it is then too late to provide for unit operation. Let us assume, therefore, that several wells have been completed in an area which unquestionably constitutes a new field. Undoubtedly, there is available a reasonable amount of geological and geophysical data, giving some indication of the probable extent of the field. If, at this point, a hearing should be had before a regulatory agency for the purpose of formulating a program for unit operation of the field, whatever its extent and character, the program would have to provide for valuing in some way all properties within the limits found from meagre evidence to be within the productive area, or the program would have to provide some method for taking care of tracts later found to be productive or nonproductive, contrary to a previous classification. The program would have to provide money for drilling and operating wells, and for distribution of the allowable production at a time when few facts existed as to the relative values of properties. If exploratory wells should first be drilled, such fact-finding procedure might cover a considerable period, and the owners and lessees of the land in the area would be deprived of the right to do their own drilling, and to secure immediate income.

Beyond question, it would be found that changes would have to be made from time to time in the relative values of tracts, frequently requiring refunds by royalty owners and lessees. The many complications arising from entering an order requiring compulsory unit operations become apparent. The facts would be too meager to permit findings as to relative values of properties supported by substantial evidence; consequently, it is extremely doubtful whether such an order would stand up in court. The chances are that it would be stricken down as being unreasonable, constituting an unwarranted regulation of property rights.

It cannot be denied that a compulsory unit-operation order would restrict the use of property and the discretion of the owners far beyond that which takes place under the usual type of conservation regulation now current. The ultimate recovery likely under a compulsory unit-operation program, as distinguished from a normal conservation program, would have to be very great before a court would hold that the extraordinary restrictions in the use of property which would take place under the compulsory unit-operation program were justified as a reasonable means of preventing waste and protecting property rights. It is more likely the courts would hold that such restrictions were far beyond the necessities of the case.

This much is certain: The merits of compulsory unit operations, as against reasonably efficient and effective control under existing conservation statutes, are not well enough established to overcome in legislative bodies the reluctance to give to administrative agencies far greater powers than are now being exercised. I think it can be said that no compulsory unit operations law would have a chance to pass either in Congress or in any State legislature. Moreover, no regulatory agency is likely, under present state of knowledge, to issue a compulsory unit-operation order without being clearly directed by statute to do so.

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[44] Walker, The Problem of the Small Tract Under Spacing Regulations, cited in note 40 supra, says near the end of the article that the clause quoted in the text merely provides that repressuring or unit operation is not required, leaving the Commission free to act, at least with respect to pooling. German, Compulsory Unit Operation of Oil Pools (17 A. B. A. J. 393 (June, 1931), 20 Cal. L. Rev. 111 (Jan., 1932)) discusses legal and practical phases of joint operation of fields and wells.

V. Probable Defects in Existing State Statutes

A. STATUTES GENERALLY SATISFACTORY

On the whole, the existing State statutes are reasonably satisfactory, at least in Arkansas, Kansas, Louisiana, Michigan, New Mexico, Oklahoma, and Texas. By stretching the facts more than is warranted, Mississippi could be included. There is no intention to say that the statutes in these States are perfect, for most of them could be overhauled and revised with much improvement; but it is erroneous to say that they are wholly inadequate, making Federal control necessary.

Complaint is frequently made that the statutes of many States give too much power to the regulatory agencies and allow them too much discretion.[45] It has been demonstrated over and over again that the legislature cannot foresee all problems which are to be disposed of in connection with conservation practices; consequently, it is utterly impossible to write a law which leaves no discretion to the administrative agency. More often than not, when a statute goes into too much detail, the foresight is erroneous, and complications arise which require another act of the legislature to cure. Such a method is not flexible enough to meet changing conditions. It must be admitted, however, that whenever broad general authority is given to a regulatory agency, the opportunity is given for unwise, arbitrary, and discriminatory action. For such actions, however, the officials must take the blame, being unable to say that they were simply doing what the statute specifically required. At any rate, the point here to be made is that the existing State statutes are on the whole reasonably satisfactory. A few specific defects will, however, be mentioned.

B. COMPULSORY POOLING SHOULD BE INCLUDED

It has already been pointed out that, in order to enforce a uniform well-spacing program, to prevent the drilling of unnecessary wells, and to prevent the confiscation of small or irregularly shaped tracts, it is desirable for the statute to give to the regulatory agency the right to acquire pooling. There is no need to repeat what has already been said above on that point. While the power doubtless exists by implication, unless its exercise be prohibited, the value of having clear statutory authority is obvious.

C. AUTHORIZE VOLUNTARY UNIT OPERATIONS

The probable benefit by the operation of a pool as a unit is well recognized as we have seen above. Should the State and Federal statutes specifically authorize operations under a unit-agreement program, it is likely that more of these agreements would be made. In those States where the agreements are specifically authorized, it is also provided that the approval of some official or agency must be secured. There appears to be no objection to a provision of that character.

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[45] Testimony of E. O. Thompson, member of the Railroad Commission of Texas, given in the hearing before this subcommittee in New Orleans, December 11, 1939, is to that effect.

D. CLARIFY FUNCTION OF COURT IN CONNECTION WITH JUDICIAL REVIEW

At the very outset of this discussion, it should be made clear that, with the possible exception of Oklahoma which has a preculiar procedure and a peculiar judicial-review program, no State statute makes the administrative agency, with respect to violation of regulations, both prosecutor and judge. The State statutes in substance provide on the whole that, if knowledge of a violation be obtained, request must be made of the attorney general to sue for injunction or penalty, or both. The court, not the administrative agency, makes the final decision with respect to the occurrence of the violation and the remedy to be applied if guilt be proved. No doubt, the suit could be defended by asserting invalidity of the statute or regulation.

All of the modern statutes make rather elaborate provision for testing the validity of the conservation statutes or any act of the regulatory agency thereunder, without first violating, and then asserting invalidity in the suit brought by the State for penalty or injunction. The usual statute provides that any interested person who desires to test the validity of the regulatory control is authorized to bring an injunction suit. The statute and the rule, regulation or order complained of are unsually declared to be prima facie valid, though doubtless prima facie validity would be the rule, regardless of statutory declaration. There is no need here to determine whether, under any particular statute the trial is wholly de novo, or whether the transcript of the proceedings before the regulatory agency may be introduced, and for what purposes, or, if introduced, whether it may be supplemented. As far as this discussion is concerned, it will be assumed that adequate right exists to present to the court the facts with respect to the points at issue.

Most of the cases arising under the conservation laws raise the constitutional question of confiscation, and also denial of equal protection of the laws. For instance, an operator brings suit attacking the validity of the allowable fixed for a lease, asserting that the regulatory agency is acting beyond its proper power by fixing an allowable much less than that to which the operator is entitled, with the result that he is not permitted to produce his fair share. It is asserted that such unwarranted taking of property is without due process of law and denies to the operator the equal protection of the laws. What is the proper function of the court in a suit of this character? To simplify the discussion, let it be assumed (and the assumption is justified) that the regulation fixing the allowable, being prospective in nature, is legislative in character, often called quasi legislative. It seems to be reasonably clear that the making of a conservation regulation, providing a rule of conduct for the future, is not the exercise of a judicial function, though the procedure (notice and hearing) may simulate judicial procedure, and be called, with some justification quasi judicial.[46]

There seems to be considerable confusion in the cases bearing on suits of the general type under discussion, most of them by the Supreme Court of the United States. If the doctrine announced in one line of cases be followed, then the trial court should simply hear the evidence and uphold the distribution order if there be substantial evidence in the record to support it. In other words, according to these cases the court should take the position that it should not usurp the functions of the regulatory agency by overturning the order and the factual findings if, from the evidence, it appears that reasonable men could have reached the same conclusion as did the regulatory agency. It is argued that, on the whole, the regulatory agencies are composed of experts, or of men thoroughly familiar with the subject matter; consequently, they are in a better position to weigh the testimony and reach a proper conclusion than is the court which must proceed in the traditional manner. Obviously, the argument supporting this line of decisions is strong. The rule has been stated in several conservation cases, though, curiously enough, it appears that in almost all of them the court did not actually follow the rule as announced, but undertook to decide many of the fact questions.[47]

There is another line of cases supporting the rule that, in a case involving confiscation and discrimination such as is under discussion, the court must not only pass on the legal questions, but, in order to perform its duty, it must also make independent determinations of fact, not being bound by the findings of the administrative agency, even though supported by substantial evidence, and regardless of the fact that, from the evidence, reasonable men could have reached the same conclusion as did the regulatory agency. These cases say that a person is entitled to a judicial determination of whether his constitutional rights have been denied, and that the judicial function cannot be exercised if the court be denied the right to make independent determinations of fact. It is clear that this argument is also supported by sound reason.[48]

No good purpose would be served by an exhaustive discussion of the two lines of cases, or a disclosure of what the courts actually do in reaching their decisions, regardless of the viewpoint expressed as to what is the court's proper function. The subject has been discussed in some detail by the writer, beginning at page 261 of the Legal History of Conservation of Oil and Gas, A Symposium. If it be assumed that the legislature has the right to provide the rule to be followed, it becomes important, then, to determine which is the better rule.

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[46] Labels, such as quasi judicial and quasi legislative, have caused some confusion. An administrative board may, as a basis for exercise of a legislative function, adopt, or be required to follow, a procedure which is typical of the exercise of a judicial function; nevertheless, the nature of the action is still legislative, and its validity should be tested as such. See brief discussion of this point by the author hereof, footnote 55, p. 260, Legal History of Conservation of Oil and Gas, A Symposium. H. R. 7372 offers an illustration: The Commissioner, in promulgating general waste prevention regulations under section 6 doubtless would perform a legislative function, frequently called quasi legislative, should he file a complaint asserting violation of the regulation, conduct a hearing, and issue a cease-and-desist order under section 15, he would perform a judicial function, frequently called quasijudicial.

[47] Typical cases where courts actually made fact findings: *Macmillan* v. *R. R. Comm.* (51 F. (2d) 400 (W. D. Tex., July 28, 1931)); *Peoples Petroleum Producers* v. *Smith* (1 F. Supp. 361 (E. D. Tex., Oct. 24, 1932)); *Thompson* v. *Consolidated Gas Util. Co.* (14 F. Supp. 318 (W. D. Tex., Mar. 30, 1936), affirmed 300 U. S. 55, 57 S. Ct. 364, 81 L. Ed. 270 (Feb. 1, 1937)); *Rowan & Nichols Oil Co.* v. *R. R. Comm. of Texas* (28 F. Supp. 131 (W. D. Tex., June 12, 1939), affirmed 107 F. (2d) 70 (C. C. A. 5th, Nov. 3, 1939)).

[48] Outstanding cases: *Ohio Valley Water Co.* v. *Ben Avon Borough* (253 U. S. 287, 40 S. Ct. 527, 64 L. Ed. 908 (June 1, 1920)); *St. Joseph Stock Yards Co.* v. *United States* (298 U. S. 38, 56 S. Ct. 720, 80 L. Ed. 1033 (Apr. 27, 1936)). The committee on administrative agencies and tribunals in its report to the section of judicial administration of the American Bar Association, dated May 9, 1939 (64 A. B. A. Rept. 407, 417), states that where constitutional questions of confiscation of property are involved, then judicial review "requires an independent determination by the court upon questions of fact as well as law."

First of all, it may definitely be said that, regardless of any constitutional question which may be involved, it appears to be unwise to provide that the findings of fact by the regulatory agency shall be conclusive, whether or not supported by substantial evidence; and it may also be unwise, in cases involving constitutional questions, to limit review of facts to a mere determination of whether substantial evidence upholds the facts supporting the regulation. It must be admitted that, if review should be so limited, the review would tend to become more or less perfunctory, and the opportunity would exist for the regulatory agency to cover up arbitrary and discriminatory action.

Some years ago, Mr. Chief Justice Hughes, in discussing the question whether legislation should go as far as possible to uphold findings of fact by regulatory agencies, made this observation:

> The power of administrative bodies to make findings of fact which may be treated as conclusive, if there is evidence both ways, is a power of enormous consequence. An unscrupulous administrator might be tempted to say, "Let me find the facts * * * *I care little who lays down the general principles.*" [Italics added.] [49]

The same idea was expressed in the opinion in the St. Joseph case where Mr. Chief Justice Hughes said:

> Legislative agencies, with varying qualifications, work in a field peculiarly exposed to political demands. Some may be expert and impartial, others subservient. It is not difficult for them to observe requirements of law in giving a hearing and receiving evidence. But to say that their findings of fact may be made conclusive where constitutional rights of liberty and property are involved, although the evidence clearly establishes that the findings are wrong and constitutional rights have been invaded, is to place those rights at the mercy of administrative officials and seriously to impair the security inherent in our judicial safeguards. That prospect, with our multiplication of administrative agencies, is not one to be lightly regarded. It is said that we can retain judicial authority to examine the weight of evidence when the question concerns the right of personal liberty. But, if this be so, it is not because we are privileged to perform our judicial duty in that case and for reasons of convenience to disregard it in others. The principle applies when rights either of person or of property are protected by constitution restrictions.[50]

On the other hand, it must also be admitted that, theoretically at least, the administrative agencies are composed of men with special training and with a sense of responsibility comparable to that of the judges. Perhaps it is true that courts, with their rather rigid procedure, are not as well equipped as administrative agencies to get at the true facts. Beyond question, instances may be given in conservation cases, as well as in other cases, where it may fairly be said that the judges did not fully understand the facts. A judge, after a short trial, has a real task in understanding a great mass of highly technical testimony. Nevertheless, it is also true that judges are well trained to understand complicated facts, and they are relatively free from the same type of pressure and influence which may bear upon members of administrative bodies, particularly if they are elected or have political ambitions. No doubt, in most instances where the judges have failed to appreciate the full significance of the evidence, the heavy business of the courts prevented more leisurely trials or more careful studies of the records. If more judges are needed before better decisions can be rendered, then such remedy is preferable to that of decreasing the extent of judicial review by making virtually final the findings of fact by administrative agencies.[51]

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[49] 46 Harv. L. Rev. 490 (January 1933).

[50] *St. Joseph Stock Yards Co.* v. *United States*, 298 U. S. 38, 52, 56 S. Ct. 720, 726, 80 L. Ed. 1033 (April 27, 1936).

It is my own opinion that statutes should require that the courts, at least in cases where confiscation is involved, should make independent determinations of fact, not being bound by findings of the administrative agency, even though these findings be supported by substantial evidence. As pointed out above, this duty may exist anyhow. Before long, the point will surely be cleared up by the Supreme Court of the United States.[52]

Likely enough the courts, though required by statute to make independent determinations of fact, would hesitate to upset findings by the regulatory agency, if there should be substantial evidence to support those findings. The danger of arbitrary action on the part of administrative agencies may indeed be greater than the danger of arbitrary action by the courts, and justification doubtless exists for requiring the courts to make independent findings. If more judges are needed, then let us have them if that be necessary to give adequate judicial review.

Mr. Cole. The condition you were describing or are criticising is cured in a bill recommended by the American Bar Association?

Mr. Hardwicke. I am sorry, but I did not understand you, Mr. Chairman.

Mr. Cole. The condition which you were criticising in your paper is the subject of a special recommendation of the American Bar Association, is it not?

Mr. Hardwicke. Yes, sir. There is a bill, the Logan bill, which has been prepared or rather approved by the American Bar Association.

Mr. Cole. Would that bill correct the objectionable features of the laws governing these regulatory commissions?

Mr. Hardwicke. I doubt if it would cover the exact point I have made here, because that bill does not make a distinction between cases involving confiscation and cases which do not involve confiscation. This distinction is recognized in the report of the Committee on the Judicial Agencies, I believe that is what they call it. I have a copy, or can get one for the members of the committee, if they are interested. The specific point may not arise under the Logan bill, at least when it relates to nonconfiscation cases. As to such cases, it is proper to provide that the court should sustain the findings if supported by substantial evidence.

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[51] Hon. Orie L. Phillips, Judge of the United States Circuit Court of Appeals, Tenth Circuit, in discussing the question whether additional Federal judges were needed, said: "I would prefer to err on the side of appointing some judges not wholly needed than to have judges so overcrowded and overworked that they cannot keep abreast of their dockets, dispose of their cases promptly and expeditiously, and give to the decision of every important controversy their best endeavors and their considered judgment." Phillips, The Courts and American Democracy, 27 A. B. A. J. 130, 131 (February 1940).

[52] In *City and County of San Francisco* v. *Market Street Ry. Co.*, 98 F. (2d) 628 (C. C. A. 9th, July 7, 1938) the court, without citing or discussing the *St. Joseph case*, followed the substantial evidence rule. The Supreme Court of the United States denied writ, which may indicate approval of the holding by the Circuit Court of Appeals. However, the obligation to make independent findings was clearly held in *National Fertilizer Ass'n* v. *Bradley*, 18 F. Supp. 263, at 274 (W. D. S. D., Dec. 8, 1936), based squarely upon the *St. Joseph case*, and the decree was affirmed 301 U. S. 178, 57 S. Ct. 748, 81 L. Ed. 990 (April 26, 1937), but with no discussion of the point with respect to the proper function of the court as to fact issues. The Supreme Court of California, in *Drummey* v. *State Board*, 87 Pac. (2d) 848 (March 3, 1939) which involved *cancelation* of a license, applied the *St. Joseph case* in holding that the court is not bound by findings of an administrative board, though supported by evidence, then later held, in *McDonough* v. *Goodcell*, 91 Pac. (2d) 1035 (June 29, 1939), that the rule was not applicable in a case which involved *refusal* of a board to grant a permit or license.as distinguished from a case *canceling* a license already granted. See 27 Cal. L. Rev. 738 for discussion of last case mentioned.

Mr. COLE. Are you speaking now of confiscation cases under the Connally Act?

Mr. HARDWICKE. No; I mean the taking property without due process of law.

The CHAIRMAN. Yes.

Mr. HARDWICKE. Such as in rate cases, or the fixing of an improper oil allowable, or something of that kind.

Mr. COLE. It was my understanding that the Logan bill, which is now the King bill, is the same as the Walter bill in the House. It has not only passed through the House committee favorably, but has been given the green light by the Rules Committee.

Mr. HARDWICKE. Yes.

Mr. COLE. And is now in control of the Rules Committee and can be brought up whenever they desire.

Mr. HARDWICKE. Yes.

Mr. COLE. I have little doubt it will be considered before a great while. I personally hope so.

Mr. HARDWICKE. From what I know about that bill, it is a very satisfactory bill. It proceeds on the substantial evidence rule, but that does not meet the type of case which usually comes up in connection with oil proration, involving the taking of one man's property and giving it to another, or something of that character. Such involves the ordinary constitutional question of taking of property without due process, not an ordinary question of restriction by an administrative board.

VI. PROGRESS OF ADMINISTRATIVE LAW

Everyone recognizes that modern life has become so complicated that extensive governmental interference with our activities was inevitable. Administrative agencies were a natural outgrowth of the situation. The oil industry suddenly found itself in 1930 in the hands of administrative agencies embarked on a program of regulation which may truly be called revolutionary. There were virtually no precedents under anything like a similar state of facts. Is it any wonder that confusion, turmoil, and mistakes are recorded?

Here we have an industry essentially composed of fiercely competitive individuals, organizations, and groups. From the very beginning they had drilled and produced their properties, and engaged in transportation, marketing, and refining activities with a minimum of governmental interference. Furthermore, the industry had a splendid record of achievement in meeting extraordinary demands for petroleum products, yet keeping prices within reasonable limits. The task of regulation called for ability of the highest order.

Many of the conservation statutes, though broad enough to authorize the regulation which was attempted, were obviously not originally designed for that purpose. It follows that the history of the development of administrative law in connection with regulation of the oil industry under conservation statutes may constitute one of the most interesting chapters in an account of the evolution of administrative law.[53]

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[53] The Legal History of Conservation of Oil and Gas, A Symposium, offers much material, particularly the papers which relate the history of the activities of the Railroad Commission of Texas with respect to oil and gas regulation.

First of all, the administrative agencies were not in a position to ignore old fields and start with nothing but new fields. They had to control hundreds of fields already developed or nearly so. Properties had been drilled and practices had been carried on in those fields with no thought of the far reaching restrictions which regulation would impose. Overnight, these operators in a sense turned their properties over to regulatory agencies, being told in great detail where they should drill, how they should drill, and how much each well could produce. At the beginning, scientific knowledge with respect to reservoir conditions, proper production practices and the like were almost insignificant as compared to the knowledge of today. Naturally enough, in the beginning many unwise things were done, and there was considerable skepticism on the part of many operators, legislators, and judges as to the value of opinions of geologists and engineers as to reservoir conditions, and as to what constituted scientific production practices. The intensity and the extent of the conflict of forces which brought about progress in regulation are fully revealed in the Oklahoma and Texas histories, demonstrating clearly the democratic process as it moves slowly to correct conclusions after many errors.

The growth of the statutory law outlined in Legal History of Conservation of Oil and Gas, A Symposium, and as sketched in this paper, shows constant change, sometimes by increasing the authority of the regulatory agencies, sometimes by restricting it, as the need was disclosed. The turmoil and confusion of the early days have now largely abated. Many questions have become settled, such as:

(*a*) The right of the State to prevent the waste of natural resources; and the right of the legislature to lay down rather general standards and leave the details to an administrative agency;

(*b*) The right of the administrative agency under a proper statute to enforce spacing regulations as a conservation measure; the right to limit the total production of fields, and to fix the maximum production of oil or gas, or both, from tracts and wells; the right to prevent production in excess of reasonable market demand, being a physical waste measure; the right to require all manner of reports and permits, and to subject members of the oil industry to frequent and detailed investigation of books, records, and the operations of wells, pipe lines, refineries and other facilities; the right to hold public hearings and to elicit data with respect to operations and properties which theretofore were considered to be confidential information;

(*c*) The obligation of the administrative agency to give each operator a reasonable opportunity to produce his fair share of the oil; the obligation of regulatory agencies to hold hearings before issuing regulations, at least if the statute so provides; the obligation of officials not to act arbitrarily; and the right of an operator to a judicial review of an administrative rule, regulation, or order.

Other evidences of progress could be listed. All this has been done in less than 10 years. Progress is still continuing; but it must be said that what has been accomplished is remarkable. The record of achievement is sufficient to justify the belief that the States are capable of solving the problems which still confront them, and which are yet to arise, with no need for the Federal Government to take over the administration.

VII. Advantages of Federal Control are Offset by Disadvantages

A. EXPERIENCE WITH FEDERAL CONTROL UNDER PETROLEUM CODE

Experiences under the petroleum code which was formulated under the National Industrial Recovery Act, covering the period from the fall of 1933 to the spring of 1935, give some indication as to what would likely take place under comprehensive Federal regulation; but, unfortunately, the period of regulation was short, and always there was doubt whether the attempted regulation was within constitutional limits. Enforcement was not, therefore, as fearless as it would have been had more confidence existed in the legality of the set-up. Furthermore, the program was complicated, involving as it did the assistance of an advisory body, called the planning and coordinating committee, the members of which were selected, or at least nominated, by the industry, and whose functions were not very definitely defined. Moreover, there was no clear-cut assertion of powers which would be exercised by the Federal Government in lieu of the exercise of similar powers by the States.

This is no place to discuss the history of Federal regulation under the petroleum code. The subject is covered somewhat in three volumes cited in the footnotes.[54]

Experiences under operation of the petroleum code did, however, bring about rather decided opinions on the part of the oilman with respect to what would likely happen should the Federal Government again exercise control over the oil industry. Whether or not these opinions are justified is immaterial. They explain the rather violent opposition of most oilmen to the proposed Cole bill or anything like it.

First, is the belief that the officials selected by the Federal Government were without experience in the oil business. The oilman, having been subjected to regulation by Federal officials whom he thought had only a superficial knowledge of the problems of the industry, is somewhat reluctant to urge Federal regulation again.

It is also the belief of the ordinary oilman that the boards and officials of the Federal Government in the days of the petroleum code were autocratic and arbitrary. Here again, it is immaterial what are the facts. The point is: the oilman thinks that the administrative officers under any Federal-control set-up would likely be autocratic and arbitrary.

During the days of the petroleum code, the Federal Government coordinated its activities with those of the State regulatory agencies, in theory at least. As already observed, the line of division between State and Federal authorities was never clearly drawn. At any rate, there was dual control, resulting at times in conflicts, and always in a great amount of duplication of effort, as well as duplication of reports, statistics, and the like. The oilman found this confusion and duplication to be exasperating. He will not relish a repetition thereof.

Actual experience under the petroleum code indicated the expense and other natural complications incident to regulation from Washington. The ordinary oilman reached the conclusion that, after all, there were substantial reasons for our form of government which proceeds on the theory that, as far as possible, local matters ought to be handled by the States, even if greater efficiency were theoretically possible should power be centralized in Washington.

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[54] Oil: Stabilization or Conservation (1937), by Myron W. Watkins; and the Politics of Planning in the Oil Industry under the Code (1936), by Rene de Visme Williamson. See also Hot Oil, The Problem of Petroleum (1936), by Samuel B. Pettnegill, formerly a member of Congress and of this subcommittee.

B. THE FIVE MAIN CLAIMS OF ADVANTAGE FROM FEDERAL CONTROL NOT JUSTIFIED

1. *H. R. 7372 is not better than the average State law.*—The so-called Cole bill has been or will be discussed in detail by others. For that reason, the opinion will simply be here stated that the bill does not come anywhere near being as good a bill as most of the State laws.

It is asserted by some witnesses in favor of the bill that it purports to be nothing more than a bill providing for assistance to, or cooperation with, the State regulatory bodies; consequently, that it was not intended to cover the same ground which is covered in State laws. However, those who have favored the bill, or something like it, make it clear that if the States do not pass adequate laws, or if the State agencies do not properly perform their duties by preventing waste and protecting the operators, then, as authorized by the bill, the Federal Government would step in and do what the States had failed to do, even to the extent of superceding wholly the activities of the State authorities. Once more, it is said that if the bill or one similar to it is offered as a model conservation bill, the comparison with most of the State laws shows that H. R. 7372 is quite defective even with respect to fundamentals.

The definitions of waste in the bill are not more comprehensive than in State laws. Indeed, from testimony before this committee it would appear that the bill was carefully written so that no authority existed to prevent production from exceeding the reasonable market demand, regardless of the fact that such limitation may be necessary to prevent physical waste.[55]

In the testimony heretofore given by proponents of the bill, and in the report of the Energy Resources Committee,[56] it has repeatedly been claimed that under Federal control, as distinguished from State control, unit operation of oil fields would somehow be brought about, and in no other way could waste be properly eliminated. There is nothing in the bill which provides for compulsory unit operations, though there is a section which authorizes approval of voluntary agreements to prevent waste. If the right to provide for compulsory unit operations exists under the bill, then it exists by implication only. The constitutionality of a compulsory unit-operation program has already been discussed. Assuming that unit operation is the ideal, how could the bill bring it about? Indeed, could a provision clearly providing for unit operations meet the constitutional test which would be applicable? Such were, in substance, the apt questions asked by

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[55] See testimony of Hon. Harold L. Ickes beginning at page 534 of the record of the hearings in November 1939 before this subcommittee, as printed for the use of the Committee on Interstate and Foreign Commerce. The testimony was given in response to a question by Mr. Wolverton, and it is clear that there is some confusion in terminology and as to what the State agencies actually do with respect to the market-demand factor in waste prevention.

[56] Watkins says H. R. 7372 does not go far enough to bring about unit operations (p. 473 of record of hearing before this subcommittee in November 1939, as printed for use of the Committee on Interstate and Foreign Commerce), while Lindsly and Dalhgren (id., pp. 485 et seq.) and McLaughlin (id., pp. 510 et seq.) strongly urge unit operation as the real way to obtain waste prevention and efficient operations. The report of the Energy Resources Committee to the National Resources Committee (1939), beginning at page 216, is to the same effect.

Messrs. Cole and Wolverton, of this committee, during the hearings in November 1939 at which representatives of the Federal Government appeared in support of the bill, stressing the fact that the States had failed to provide for unit operations, therefore the Federal Government should do the regulating.[57]

There is nothing in the bill which provides for compulsory pooling to prevent confiscation of small or irregularly shaped tracts. The proponents of the bill argue for Federal regulation as a means of reducing unnecessary wells and to prevent confiscation, yet pooling is not specifically covered by the bill. If the right to require pooling exists, it arises by implication.

There is no provision setting forth standards for distribution of allowable among the States, among the fields in a State, or among the operators in a field; and there are no restrictions on the authority of the officials with respect to proration of allowables.

H. R. 7372, with respect to its provisions for judicial review, is considered to be inadequate; indeed, it may even be said to be quite unfair to the persons regulated. Other witnesses have discussed or will discuss in detail this subject, so here it is sufficient to say that the provisions for court review are most unsatisfactory.

For that matter, even if all the subjects just mentioned were covered, with the powers and duties of the administrative agency clearly defined, H. R. 7372 would still not be a better bill than existing laws in most of the States, except perhaps in one or two instances. If the lack of a compulsory pooling law in New Mexico, Louisiana, and Michigan, and the failure of some of the statutes of some of the other States, such as Texas, to give specific authority for pooling, is causing such waste that the Federal Government is greatly concerned, then it seems far more simple to suggest that all of the States pass a compulsory pooling law like the one in Arkansas, rather than yield regulation to the Federal Government.

2. *Centralized control against local control.*—Many of the proponents of Federal control point to the fact that control centralized at one point is far more efficient than diversified control. Theoretically, that is doubtless true. It is now trite to say that our whole theory of government is contrary to that which includes centralization. The evils of centralization, or even a mild form of dictatorship, more than offset the benefits which are likely.

At any rate, the inefficiency of State control should be made very clear; the extent of the resulting waste should be proved to be enormous; and the inability or refusal of the States to do a better job should be established almost beyond debate—before abandoning local self government.

3. *The absence of control in some States does not justify Federal regulation in all States.*—The need for Federal control has been asserted because there are no adequate conservation laws in California and Illinois. Even if it were assumed to be a fact that waste of great magnitude is taking place in both States in the absence of State regulation, it is not at all certain that State control will not be had in those States within a reasonably short time. Again, there actually is rather comprehensive regulation in California, partly voluntary and partly under a gas waste statute.

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[57] See note 56, but particularly the question and answers beginning at p. 470 of the record of the hearings in Washington in November 1939.

Our form of government, with its emphasis on control by the States of local matters, gains much of its strength from the right of a State to be out of step with other States, and to make social and legal experiments which at the time actually are or seem to be wholly at variance with current thought and practices. Sooner or later, however, the problem is satisfactorily solved. It has never been the accepted idea that the Federal Government should take over the functions of the States with respect to any local problem, at least as long as a reasonable solution by the States was under way. In respect to conservation and oil production practices, the record of achievement by the States and the oil industry of the United States during the last 10 years is remarkable. The fact that this progress was made in the face of bitter contests in legislatures, before administrative boards and courts, and after heated debate in all other forums, rather than by following the dictates of some all powerful official or bureau, is the strongest proof of the vitality of the movement, and of the reality and permanence of the progress.

It cannot be denied that the States and the industry are continuing their fine work. If it be true that practices in Illinois and California are not as efficient as in other States, it is reasonably certain that before very long remedies will be applied, with or without conservation laws, and there is no need for the Federal Government to take over in those States or elsewhere.

4. *No certainty that officials would be better.*—If the States are not doing a good job of regulation, the fault can be traced primarily to the lack of ability and integrity of the State officials, rather than to the provisions of the statutes. Is there any guaranty that Federal officials would on the whole be a higher type than the present State officials? A Federal badge on a State official would not necessarily make him a better man.

H. R. 7372 contemplates that there shall be established in the Department of the Interior a board called Office of Petroleum Conservation which shall be under the direction of a commissioner appointed by the President, assisted by two associate commissioners appointed by the Secretary of the Interior. The Secretary of the Interior is authorized to appoint deputy commissioners, experts, and other employees. In a broad sense, the administration of the act is under the direction of the Secretary of the Interior. No one pretends that he could personally act, though he would be responsible to some extent for the acts of his appointees.

The bill does not set up any qualifications for the administrative officials. There is nothing in the bill to reduce the danger of the appointment of unqualified or inexperienced men.

5. *Coordinated control too expensive.*—If it be true that in practice the regulation by the Federal Government would simply be cooperation with the State governments, then it is obvious that, if the Federal agents proceed with any real knowledge, they must have the facts. In order to obtain the facts, a great number of employees would be required, offices would have to be opened in many places, there would be reports, data, permits and the like, as in the Code days, resulting in an enormous duplication of expense, not only to the operators but to the Federal Government. Surely there should be good reason for any such expense. It is believed to be wholly out of line with the probable benefits.

VIII. Desirable Functions of the Federal Government

A. CONTROL OF IMPORTS

Inasmuch as prevention of waste requires restriction in the total amount of oil which may be produced, it is clear that, while such restriction is taking place, some control ought to be exercised over imports. Only the Federal Government has that power; consequently, through import taxes or otherwise, the Federal Government can do its part to assist the States in production control.

B. CONTINUE CONNALLY ACT

In brief, the Connally Act provides for prohibition of movement in interstate and foreign commerce of "hot oil," such being oil produced in excess of the allowable fixed by State regulation. This act was passed as an aid to the enforcement of State laws in the same manner as the Dyer Act prohibited transportation of stolen automobiles across State lines, and thereby aided the States in the enforcement of automobile-theft laws. The Federal Government, acting under the Connally Act, has performed a real service, and the act should be continued.

C. IMPROVE INTERSTATE COMPACTS

This is not the place to debate the merits or demerits of the Interstate Oil Compact or to discuss the activities of the Interstate Oil Compact Commission. The opinion is expressed, however, that the compact has been worth while, and its activities may yet be expanded into outstanding accomplishments.

The very existence of the compact is a novelty offering considerable possibilities for assisting the States in doing a good job of production control. The Federal Government can help by fostering the compact, and by assisting the States in working out a program for the compact which will result in greater benefits.

D. DISSEMINATION OF INFORMATION

1. *Papers by the United States Bureau of Mines.*—The United States Bureau of Mines has rendered great services to the oil industry. The reports, articles, papers, and other publications relating to the oil industry are everywhere recognized as outstanding contributions to the problems of the industry. In the main, these papers deal with technical production problems, or are fact finding in character; nevertheless, much of the work which has been done may be applied by State agencies and operators in bringing about more effective waste prevention. It would be out of place here to attempt any resume of the fine work done by this agency. Three examples, however, may be given to illustrate the aid being given to the States.

First, the Bureau made a study of the amount of oil in storage, the length of time it had been in storage, and the effect of storage on the quality of the oil. Obviously, knowledge of these facts made possible a more intelligent administration of the conservation laws.[58]

Second, regulatory agencies are confronted with well-spacing problems. Some years ago a bulletin was published by the Bureau concerning well spacing and ultimate recovery.[59] Since the bulletin was written, production practices have materially changed, particularly because wide open flow has been practically eliminated, and nearly all fields are produced under back pressure, and with varying degrees of proper ratable production. It became necessary to reexamine previous findings in the light of new practices and new information. This has been done by the Bureau, which has just released a paper on the subject under the title Review of Cutler's Rule of Well Spacing.[60] The paper will be accepted as high authority, and no doubt will go far toward settling many of the points at issue.

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[58] Survey of Crude Oil in Storage, 1936–37, (R. I. 3417, September 1938).

Third, the Bureau, in cooperation with the American Petroleum Institute, has worked out a device for taking cores or samples of sands so that these samples will reflect conditions as they are in the reservoir.[61] Heretofore, cores have been taken, but under conditions which exposed the core to the atmosphere and to changes in pressure so that the core which was examined did not show accurately conditions as they are underground. The new technique offers an opportunity for a more accurate study of reservoir conditions, and gives data for more effective control under existing statutes.

Beyond question, the activities of the Bureau as they relate to oil and gas should continue. Indeed, it may fairly be argued that they should be extended. There is some justification for suggesting that these studies should not be limited to highly technical problems, but should even embrace subjects which are more controversial.

2. *Papers by United States Geological Survey.*—The work of the Survey, though it does not touch production-control problems as closely as the work of the United States Bureau of Mines, could well be expanded in further aid of State agencies. Obviously, the greater the information about reserves, the nature of the reservoir, and other geological facts, the better should be the regulation.

3. *Continuation of estimates of consumptive demand.*—The estimates of consumptive demand have been a great aid to regulatory bodies with relation to the fixing of allowable production, and should be continued. The United States Bureau of Mines has complete facilities for obtaining the statistical information necessary to make the estimates. These data are not available to any other person or agency.

4. *Studies of economic problems.*—Frequently, the Bureau, as well as other governmental agencies, makes studies of economic problems, publishing papers in connection therewith. These papers are of great value. For instance, a few years ago the Petroleum Administrative Board made full reports on production costs, and on marketing practices.[62]

Recently, the Energy Resources Committee published it sreport to the National Resources Committee under the title "Energy Resources and National Policy," such report covering various phases of the energy resources of the Nation, including oil and gas. In spite of the fact that parts of the report dealing with oil are contradictory and confusing, and parts show failure to understand the full significance of some of the available material, or the legal and practical difficulties involved in any such progarm of regulation which the report suggests, the report does not contain much information and data which may be used by regulatory agencies under conservation statutes. Whether or not we agree with all of the findings which are set forth in the oil section of the report, or the interpretations placed thereon, or agree with the recommendations favorable to comprehensive Federal regulation, the report represents a serious and well-documented discussion of problems confronting the Nation with respect to its energy resources.

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[59] Cutler, Estimation of Underground Oil Reserves by Oil-Well Production Curves, Bull. 228 (1924).

[60] The report, written by H. C. Miller and R. V. Higgins, is identified as R. I. 3479 (November 1939). It confirms the opinion, now well established, that the conclusions stated by Cutler in 1924, to the general effect that four wells will double the recovery possible from one well, should be interpreted in view of the fact that open flow conditions prevailed at that time, and that now we have restricted production and more scientific practices making it reasonably certain that the rule previously stated is not applicable. The more efficient use of reservoir energy makes possible relatively wide spacing, with no loss in ultimate recovery. The new report also states that the original conclusions expressed by Cutler are applicable only to the conditions outlined in the original report, and only within a relatively narrow range of well densities.

[61] Taliaferro and Heithecker, Bureau of Mines—A. P. I, Pressure Core Barrel (Progress Report on Its Design and Development), R. I. 3481 (November 1939).

[62] Report on the Cost of Producing Crude Petroleum (December 1935), and Final Report of the Marketing Division of the Petroleum Administrative Board (June 1936).

Economic studies by agencies of the Federal Government can be of assistance to State regulatory bodies, and to the industry, at least as long as those studies are accurate.

5. *Studies with respect to legal problems.*—In 1934, the Department of the Interior (Geological Survey) published in mimeographed form an article by LeRoy H. Hines, under the title "Some Aspects of Unit Operation of Oil and Gas Pools and Fields." The discussion was excellent.

In 1933, the Federal Oil Conservation Board published two books by Northcutt Ely, entitled "Oil Conservation Through Interstate Agreement" and "The Oil and Gas Conservation Statutes, Annotated." These books are in constant use by the State regulatory bodies and by others who study regulation under conservation statutes and interstate compacts. The volume concerning oil conservation by interstate compact probably had great influence in bringing about the Interstate Oil Compact which is now in existence.

There are many fine lawyers employed in various departments of the Federal Government which have to do with conservation of natural resources. These men are in a position to write outstanding articles on live, legal problems which would be of aid to the States in enforcing their conservation laws. Their assistance would be welcomed.

6. *Investigations and reports with respect to waste and the remedy.*—If the conservation statutes are not being effectively enforced by the States, and if there are many wasteful practices going on which ought to be stopped, it would appear that the officials of the Government who are cognizant of these practices, and who are urging Federal regulation because thereof, have not been very specific as to where the waste is taking place or how it could be avoided. The Federal Government could help the States, and would perform a desirable function, by having the proper departments make frequent surveys, publishing reports and recommendations which would be available to the State agencies and to the public generally. Certainly, as long as these investigations were made intelligently by competent men, and the reports represented a real desire to get at the facts and stop wasteful practices, the desired result would likely be brought about shortly after the release of the report. Aid of this character could be given without first passing such a bill as H. R. 7372 or any other similar bill.

7. *Publication of books.*—The Federal Government could well publish in book form, or in more permanent form, the papers and articles by the United States Bureau of Mines and by other depart-

ments, relating to conservation of oil and gas. Most of the papers are in pamphlet form, some being merely mimeographed. The cost of publishing the more important papers in book form, annually or biannually, would not be great.

The writer pointed out that at page 151 of Petroleum and Natural Gas Bibliography, published in 1937, that the United States Bureau of Mines, for lack of funds, discontinued in 1923 the publication of its comprehensive bibliography relating to petroleum and allied substances, and also discontinued, in April 1933, its publication of Recent Articles on Petroleum and Allied Substances, such last publication being a monthly release in mimeographed form covering the period from January 1924, to April 1933. Since April 1933, there has been no bibliography or list of articles on petroleum covering the great mass of material appearing in current periodicals. The need for a continuation of the work by the United States Bureau of Mines which ended in April 1933, is evident.

IX. Concluding Remarks

The States and the oil industry have done a good job of eliminating the waste of oil and gas. The Federal Government in cooperation has rendered great assistance, which has been welcomed. Existing evils should be of great magnitude and it should clearly appear that the States and the industry cannot or will not apply known effective remedies, and that such can be applied by the Federal Government, before undertaking to change our traditional division of Federal-State powers by making the Federal Government supreme in local matters.

I cannot believe that conditions warrant any such regulation of the oil industry by the Federal Government which would take place under H. R. 7372.

Mr. Pearson. I would like to ask one question.

Along toward the close of your statement, on page 56, you state that if it be true that the practice in Illinois and California are not as efficient as the other States, it is reasonably certain that before other remedies will be applied, oil conservation laws will be passed and that there will be no need for the Government taking over those States.

I was just wondering, Mr. Hardwicke, what makes you feel so certain that there is going to be any betterment in the situation in California, in view of the history of the situation out there.

Mr. Hardwicke. Well, in the first place, I did not know that conditions were so bad.

Mr. Pearson. I do not mean to imply that they are so bad; but I do not think that there is any question but what there are some abuses going on in California under a voluntary system and also it is certainly ture that the industry has opposed and strongly fought every single statutory regulatory measure that has been offered to the legislative body of that State.

Now, it just strikes me that there is something singular about the industry not having any confidence in their own State legislature to regulate the industry or even to support a movement to enter into the Interstate Compact, and at the same time oppose any sort of regulation on the part of the Federal Government, in spite of the fact that there are some known abuses existing.

I am willing to concede that the proof shows that they have made an honest effort to remedy that and I think they have bettered the conditions somewhat; but it has been going on now over a long period of years and I was just wondering what made you feel so certain that without any Federal regulation we might look forward to a correction of existing abuses in California and Illinois, which is comparatively a new discovery.

Mr. Hardwicke. Take California first. I think it would take a rather hardy man to say that there is any reasonable chance of getting satisfactory legislation in California. By referendum vote the people have already killed two bills, one of them last summer, and I am not going to stand here and say that California is going to pass next week, or next year, any State bill, or, if the legislature does that, there will not be a referendum to kill the bill. And I, therefore, in my statement said that conservation would likely take place, with or without conservation legislation. Now, they do have a pretty good condition anyhow. They have done a pretty fair job, not as good as other States, by voluntary regulation.

Now, I am not as well acquainted with the facts in California as for instance Mr. Allen, who will testify later, and I would much prefer for him to give you the details, but I do think and, may I make this clear, there may be abuses in California. One man may be getting another fellow's oil under the program scheme that they have formulated; there may be all manner of evils that exist in one part of the State, or in some fields of the State, where some operators are getting more than their shares. After all, I cannot see where the Federal Government necessarily would be interested in that. That is just between the parties, the concern of those injured by the injustices. If they want to stand them, that is their business. If you are talking about waste in California, and in enormous quantities, I doubt if the record will justify that conclusion, but I shall have to let Mr. Allen, who is here, give you the details on that point.

Mr. Pearson. I simply asked the question because I was in hopes that you did have something upon which to base that statement, because I feel if the situation in California and Illinois could be adjusted to the satisfaction of any who might complain about the conditions, we would be a long ways toward getting away from Federal regulation.

Mr. Hardwicke. Certainly. The chance of getting a bill in Illinois is much better than in California. That is my own personal opinion. You have just had a situation, a referendum complex in California, that upset whatever the legislature did, and you will likely have that, which will upset whatever the legislature may do, with the people voting as the result of seeing posters stuck on walls, and things of that sort, without the slightest conception of what the issues are or what should be done.

Mr. Pearson. You must remember though, Mr. Hardwicke, that the industry spent several hundred thousand dollars putting those posters up and telling the people what they should do.

Mr. Hardwicke. Without knowing the facts of it, without being certain, I think the industry did not oppose the bill. I am satisfied you will find that it did not. I would say that the industry as a whole was for the bill and tried to pass it. I doubt whether or not the industry in California as a whole is opposed to a bill. I do know that one element in the industry did oppose the last bill violently, but I think that if you were to take account of numbers or take into consideration the stability and character of those who opposed it, as against those who were in favor of it, you would have to say that the great majority of the better element in the industry were in favor of it. That would be my guess on the situation.

Even if I were to admit that the situation is bad in both California and Illinois, and will get even worse than it is now, which is not so bad, I am not sure that I would be willing to have the Federal Government go in, unless conditions got into a terrible mess; and I do not know how bad they would have to be before I would change my viewpoint that after all it is still a State matter.

Now, as to whether it is best to change our normal form of government; whether the Federal Government should be one of general powers instead of one of limited powers, that is something different. I might conjure up conditions and facts which would lead me to suggest general powers for the Federal Government, and might even help to pass a constitutional amendment to do that; but I am not willing now, even if conditions were worse than they are today, to say that I would prefer to make the Federal Government one of general powers to control local matters—not now. What I would do a year from now, I will talk about then. I would not do it today.

Mr. Cole. Mr. Hardwicke, I think perhaps, from the statements you have made as to the State laws, you might be able to clear up a couple of memoranda I have here. Or, would you prefer that some other witness do that? I want to ask as to New Mexico. Has New Mexico enacted any natural gas conservation law under which the output of natural gas produced from a gas well might be regulated?

Mr. Hardwicke. From a gas well as distinguished from an oil well?

Mr. Cole. Yes.

Mr. Hardwicke. I think that the State oil and gas conservation bill controls both.

Mr. Cole. Are you sure about that?

Mr. Hardwicke. Yes, sir.

Mr. Cole. Are you not mistaken as to that?

Mr. Hardwicke. The law says waste of oil and gas are prohibited.

Mr. Cole. My understanding is that just the opposite is true. I do not know whether there is anyone here who can answer that.

Mr. Hardwicke. We can look and see.

Mr. Cole. I am of the opinion New Mexico has never enacted any natural gas conservation law under which the output of natural gas produced from a gas well might be regulated.

Mr. Hardwicke. The statute reads:

> The production or handling of crude petroleum or natural gas, or the handling of products thereof, in such manner or under such conditions or in such amounts as to constitute or result in waste is each hereby prohibited.

I would say that production of natural gas in wasteful quantities is prohibited.

Mr. Cole. In the application of that as compared to other States, they do not limit the gas produced in New Mexico, as I understand, from a gas well.

Mr. Hardwicke. As an administrative matter, that may be true. I am not familiar as to what they do in administering this law with respect to gas wells.

Mr. Cole. Who is there in this list of witnesses who would know?

Mr. Hardwicke. Mr. Schilthuis would know. He will be on the stand following me, and I am sure that if he does not know, someone else will.

Mr. Cole. Mr. Schilthuis will testify covering that?

Mr. Hardwicke. Yes; he will know the facts.

Mr. Cole. A memorandum I have states that the State of New Mexico does not control the production of a gas well. You state that the New Mexico statute does authorize control to prevent waste. You stated that you were familiar with the New Mexico statute, held it up as a model, and I thought that you naturally included the operation in the administration of the law.

Mr. Hardwicke. I simply said that the regulatory agency had the power to prevent waste of gas.

Mr. Cole. How about Oklahoma; how do they deal with the situation there?

Mr. Hardwicke. I think that they have the same power.

Mr. Cole. Has Oklahoma ever enacted any law such as suggested in article IV of the compact which reads:

> Each State bound hereby agrees that it will, within a reasonable time, enact statutes, or if such statutes have been enacted then that it will continue the same in force, providing in effect that oil produced in violation of its valid oil and/or gas conservation statutes or any valid rule, order, or regulation promulgated thereunder, shall be denied access to commerce; and providing for stringent penalties for the waste of either oil or gas.

That is the end of article IV.

I would like to know, if you can tell me, whether Oklahoma has ever passed any law as suggested in that section.

Mr. Hardwicke. I think the statutes of Oklahoma deal rather fully with gas, both in the general waste statute and in a particular gas statute. I would like to make a check to be more accurate.

Mr. Cole. I do not think you understand what I mean. Maybe you do. The compact imposed upon the States, parties thereto, by article IV, definite requirements as to the passage of State laws. My understanding is that Oklahoma has not. I am asking you this after hearing your paper, because I thought in view of the fact that you were covering all of the various statutes you could answer such a question. My understanding is that Oklahoma has never passed such a statute.

Mr. Hardwicke. You are referring to a gas waste statute now?

Mr. Cole. How is that?

Mr. Hardwicke. A gas waste statute?

Mr. Cole. No; I am talking about oil or gas in commerce. Is there any statute, rule, or regulation in Oklahoma which gives the Oklahoma Corporation Commission authority over the movement of oil in commerce, after the oil has been produced such as you have in Texas, for instance?

Mr. Hardwicke. I think that authority exists as a necessary incident to the authority to control production and that has been held by the Texas courts, even before the legislature passed what we call the criminal portion of the tender statute.

Mr. Cole. All right; let us stop there. You say that is a necessary incident to the proper enforcement of the State law?

Mr. Hardwicke. I think it is.

Mr. Cole. And in Oklahoma, without such a law, you think is bad?

Mr. Hardwicke. Pardon me.

Mr. Cole. You say that you think that it is an incident to the proper enforcement of the law?

Mr. Hardwicke. Perhaps I was not accurate in my statement. The right to control the transportation of oil or gas within the State of Oklahoma or any other State is a necessary incident, necessary incident to power which may be exercised by the regulatory agencies in order to enforce its proration laws, and as a matter of fact——

Mr. Cole (interposing). Then, if that is correct, I do not know whether I am misinformed. Is the purchaser or transporter of oil which has been produced in violation of Oklahoma laws, rules, and regulations, subject to penalties for violations thereof?

Mr. Hardwicke. So far as moving of hot oil is concerned?

Mr. Cole. Yes.

Mr. Hardwicke. I prefer not to answer that offhand, because I am not positive.

Mr. Cole. Assuming that my recollection is correct and that such a condition does exist, such is just the opposite of what you have in Texas, is it not?

Mr. Hardwicke. My recollection of the way the point first arose in Texas is that the authority to control transportation of hot oil was said to be incident to the control of production. The Commission prohibited the movement of hot oil, and then, when anybody violated that order, they were penalized, which was a violation of the regulation properly made to control production.

As a matter of fact, a Federal court even upheld the requirement of tenders or permits for the transportation of oil in interstate commerce on the ground that it was a necessary incident to effective control of production, a method of knowing what was going on.

So, I would say, that the power to prevent movement of hot oil exists in Oklahoma, and the Commission can make a similar regulation to that made in Texas, without having a more specific statute.

Now, whether they have actually made that regulation, I am not positive. They could do so.

Mr. Cole. Under the compact they are supposed to. That is the thing I wanted cleared up.

Mr. Hardwicke. Yes. I would be glad to check that and file a statement with you if you desire.

Mr. Cole. Mr. Hardwicke, you are one of the general counsel of the Humble Oil Co., are you not?

Mr. Hardwicke. No, sir.

Mr. Cole. Is your firm?

Mr. Hardwicke. No, sir. You say general counsel?

Mr. Cole. Well, are you occasional, then?

Mr. Hardwicke. Yes, sir; we just finished a big lawsuit in which I assisted the regular attorneys for the Humble Co. involving the East Texas orders. But I am in the general practice.

Mr. Cole. You did not represent, or your firm did not represent, any of the interests in California advising them in the recent November election, did you; in that campaign?

Mr. Hardwicke. No, sir. I conferred with them when the original draft of the bill was prepared, but I had nothing to do with the campaign; nothing whatever. I had nothing whatever to do with it.

Mr. Cole. But you represented the Humble Oil as one of the counsel in the pending or recent case against the Railroad Commission of Texas?

Mr. HARDWICKE. Yes, sir.

Mr. COLE. Preliminary to the filing of the bill of complaint in that case, being a good lawyer, as you are, I assume you were supplied with expert evidence to support the allegations of your bill?

Mr. HARDWICKE. We thought so.

Mr. COLE. Who were your engineers and geologists advising you preliminarily to the bringing of that action?

Mr. HARDWICKE. A great number of Humble employees. We consulted with a number of its geologists and engineers.

Mr. COLE. Do you have such reports of your engineers and geologists, and might this committee have the benefit of their work, that is the work by experts which you used in preparing your petition against the Railroad Commission?

Mr. HARDWICKE. There was first a hearing on the preliminary injunction.

Mr. COLE. I beg your pardon.

Mr. HARDWICKE. There was first a hearing on the application for preliminary injunction——

Mr. COLE. I am not talking about that hearing. I am talking about this, Mr. Hardwicke, sitting down in the privacy of your own office preliminarily to bringing this action against the Railroad Commission of the State of Texas, you had, I am quite sure, advisory reports from engineers and geologists which formed the bases for this action. Otherwise, you could not have made the allegations in the bill you did.

Mr. HARDWICKE. You can talk to them.

Mr. COLE. I beg your pardon.

Mr. HARDWICKE. You can talk to them. You do not have to have long reports. That is what we did, sat down around the table and thrashed it out. Obviously, they had any number of calculations and tables.

Mr. COLE. It was sworn to, was it not?

Mr. HARDWICKE. What I started to say a while ago——

Mr. COLE. I mean, your complaint was sworn to?

Mr. HARDWICKE. Oh, yes. And affidavits were filed stating facts in tremendous detail in support of that complaint. I was going to say, in the hearing on application for preliminary injunction, the facts were given in affidavits, and those affidavits are available, and I shall be delighted to get you copies of them, if you desire it. They are public records.

I do want to make it clear that preliminary to the drafting of those affidavits which were presented at the time of the petition, we simply got around the table and discussed the facts by the hour, trying to find out the true situation.

Mr. COLE. When you made the statement in the bill of complaint in the civil action to which we are referring?

Mr. HARDWICKE. Yes, sir.

Mr. COLE. Which is now pending in the western district of Texas, Austin division, you made the statement there in behalf of the Humble Oil Co., that:

> The field allowable has been placed so high as to cause physical waste.

You still stand by that statement?

Mr. HARDWICKE. Yes, sir. That lasted a very short time.

Mr. COLE. I mean, you still stand by that?

Mr. HARDWICKE. Yes, sir.

Mr. COLE. You still stand by that statement?

Mr. HARDWICKE. Just a minute. I think that I had better make that clear. A top allowable for the field which is too high brings on, if continued over a long period of time, physical waste.

Mr. COLE. Yes.

Mr. HARDWICKE. Now, this top allowable did not last a long time and before any damage was done by that top allowable it was reduced to the figure which would not bring about physical waste. If it had continued over a long period, waste would have resulted.

Mr. COLE. Yes, sir; but in the memorandum which was filed by you, I presume on behalf of your clients——

Mr. HARDWICKE. Yes, sir.

Mr. COLE. On motion for the preliminary injunction——

Mr. HARDWICKE. Yes, sir.

Mr. COLE. On October 16, 1939.

Mr. HARDWICKE. That is right.

Mr. COLE. You attacked then the Commission's orders of September 11 and 19, 1939.

Mr. HARDWICKE. Yes, sir.

Mr. COLE. And specifically the part of the orders, that is, rule 23, which was in question.

Mr. HARDWICKE. Yes, sir.

Mr. COLE. Which I have just quoted.

Mr. HARDWICKE. Yes, sir.

Mr. COLE. In which you say, as to the East Texas field, quoting from rule 23, which is in the memorandum in which you move for a preliminary injunction against the operation of that rule, as follows:

> Not more than 690,000 barrels of crude oil shall be produced from the East Texas field during any day of the effective period of this order.

Mr. HARDWICKE. Yes, sir.

Mr. COLE. Now, that is the order of September?

Mr. HARDWICKE. Yes, sir.

Mr. COLE. And you stated in those proceedings that such allowable for the East Texas field was unnecessarily high because it caused physical waste and confiscation.

Mr. HARDWICKE. That is correct.

Mr. COLE. Last week you withdrew some of the allegations, I believe, did you not, while in court?

Mr. HARDWICKE. No; we did not; no.

Mr. COLE. You still support all of the allegations of the bill?

Mr. HARDWICKE. With this explanation, Mr. Cole, that you must take into consideration that there are shut-downs which reduce the top allowable. I think at the time of the trial just finished the field was to produce only 17 days out of the Month of February, being shut down on the other days. Now, when you translate that back to the allowable, it is not 690,000 barrels, but four hundred and some odd thousand barrels, which is a good figure.

Mr. COLE. All right; let me read a little bit from the memorandum which you filed with the court in support of the complaint in this case, which you say you still stand by. I quote:

> The field allowable has been placed so high as to cause physical waste. This fact is borne out by the evidence of Mr. Cottingham, the Commission's chief engineer, at the State-wide hearing held May 14, 1936, of Dr. Patten at the State-

> wide hearing on June 12, 1939, by the evidence of Sorrenson and Moore in the Humble hearing on August 16, 1939, and by the curve attached to Moore's supplemental affidavit. They all agree that the critical stage is about 380,000 barrels of oil in view of the production daily of about 150,000 barrels of water. We do not intend to overemphasize this point, but feel it is important because it is the duty of the railroad commission under the law to prevent waste. The high top allowable will cause waste, and, therefore, the order is unreasonable and further violates the injunction. Experience in the past has demonstrated that the high top allowable is wasteful.
>
> Specifically, the high top allowable will cause waste by premature dissipation of the reservoir energy by coning of water from the bottom and by channeling of water through the sands. Large quantities of oil will be trapped off or enveloped which otherwise would be produced by plaintiff and other operators in the field. The orders, therefore, are confiscatory. The high allowable is not dictated by the necessities of the case.

Mr. HARDWICKE. Yes; that is right.

Mr. COLE. That allegation still stands against the Commission?

Mr. HARDWICKE. Yes, sir. If that high top allowable had continued over a period of time, there is not any shadow of doubt, under the testimony of the engineers, that it would cause physical waste.

The allowable for the East Texas field is now around 400,000 barrels—there is only about a 20,000-barrel difference from the figure of 380,000 referred to above.

So, the Commission has already cut the field back to the point where there is no physical waste by virtue of excess of allowable.

Mr. COLE. Well, in the order of the Commission dated January 24, 1940——

Mr. HARDWICKE. That is right.

Mr. COLE (continuing). Fixing the allowable for the production of crude oil in the various fields and districts in Texas from February 1, 1940, to March 1, 1940, the Railroad Commission of Texas continued rule 23, with wording identical to that in its orders of September 11 and 29, 1939.

Mr. HARDWICKE. Yes, but with 12 shut-down days, which made the allowable for the month 400,000 barrels, roughly. That is where the difference is.

Mr. COLE. How much was the allowable; 400,000 barrels?

Mr. HARDWICKE. About 400,000 barrels.

Is that correct, Mr. Schilthuis?

Mr. SCHILTHUIS. About 404,000 barrels.

Mr. HARDWICKE. About 404,000 barrels for the month, by virtue of the shut-downs.

Mr. COLE. But, the order of January 24 does not qualify it in that manner, does it?

Mr. HARDWICKE. No, sir; except that the orders issued in September—there were two orders issued in September.

Mr. COLE. I do not know what the orders of September have to do with the shut-down. As I understand they were shut down in August.

Mr. HARDWICKE. I see the confusion now, and I am sorry that I did not see it sooner.

There was a general State-wide shut-down in August—all wells and all fields. This was unusual. Frequently orders are issued for a stated amount for the month, then if the Commission wishes to reduce the total State allowable, say by 4/30, or 1/7 per week, instead of simply cutting the top allowable 4/30 the commission leaves the top allowable exactly as it was, and provides that the operators cannot produce on Sunday, so that the net result, by shutting down on Sunday, is exactly the same as if the operator had produced seven days with the week's allowable ⅐ less than before, and that is what the situation is.

Now, theoretically, the Commission fixed the top allowable at 690,000 for February then, it reduced the production on the average for the month by shutting down the East Texas Field for 12 days during February, and it will actually produce 404,000 barrels per day during that period, which is the same as having a real top allowable of 404,000 barrels.

Mr. Cole. Does not the Commission take into account the shut-down days in computing the 690,000 barrels and determine that for the period covered, that it should not average more than 490,000 barrels or not more than 690,000 barrels should be produced in any one day?

Mr. Hardwicke. I do not remember the 490,000-barrel figure.

Mr. Cole. I mean, the Commission did the very thing you are talking about; they took into consideration the shut-down days in determining this allowable, did they not?

Mr. Hardwicke. I think they did; yes, sir. The net result is absolutely the same. There is no difference from having 690,000 barrels allowable and shutting down 12 days, and having a 400,000-barrel allowable and producing the full amount every day. The figure is exactly the same, so far as the reservoir is concerned. I repeat, that the engineers did testify, and so far as I know will testify again, that a daily production of 690,000 barrels of oil in the East Texas Field is too high and will cause waste if continued. It would not do so if it were for tomorrow only, or if the field produced 900,000 or even 800,000 barrels tomorrow, and the next day and the next day after that, but if it were continued over a period of time it would cause waste, yes, sir.

Mr. Cole. Yesterday in the colloquy between Mr. Hardwicke and myself I was left with the impression that we both were practically of the same opinion as to the situation in East Texas with respect to the order which I was asking him about. I have conferred with Mr. Hardwicke; both he and I did a little work on it, so I would like to have him discuss this further.

Mr. Hardwicke. Mr. Chairman and gentlemen of the committee, the order of June 19, 1939, of the Railroad Commission of Texas limited production of the East Texas Field to an allowable of approximately 522,000 barrels per day, according to the face of the order.

However, the commission also issued an order shutting down the field on 8 days, so that actually the total allowable for the entire month was but 383,000 barrels.

The same situation substantially existed during July.

The Humble Oil & Refining Co. filed suit in July attacking the validity of the June 19 order on the ground that it did not distribute fairly, among the operators in the field, the total top allowable.

In the original petition in that action there was no contention made that the top allowable was too high or too wasteful. The sole attack was upon the method of distribution of the allowable production.

A hearing on preliminary injunction was had in San Antonio, Tex., before a three-judge Federal court in August 1939, and immediately after this hearing the court entered its decree restraining the operation of that order against the Humble Oil & Refining Co. on the ground that the distribution of the allowable was discriminatory, or probably discriminatory. The court granted a preliminary injunction, enjoined the enforcement of that order against the Humble Oil & Refining Co. A few days after the injunction was issued the railroad commission of Texas called another hearing, and issued a new order for the purpose of meeting the decree of the court.

The new order, which became effective September 1, 1939, for all practical purposes had a top allowable of 546,700 barrels, approximately, per schedule. However, when the shut-down order which followed, shut the field down during the month, the total allowable for the field was considerably less than the so-called scheduled allowable, or the figure which shows in the face of the order.

Subsequently, by the order of September 14, followed by the order of September 29, the total field allowable, according to the schedule was raised to approximately 690,000 barrels. However, taking into account the shut-downs ordered, there was considerably less than 690,000 barrels. There was actually a total allowable of about 445,000 barrels, as I remember it under the order of September 29, which was the same as the order of September 14.

After the issuance of the order of September 29, 1939, effective for October, the Humble Oil & Refining Co. filed a supplemental petition attacking the orders of September 14 and September 29, and any orders similar thereto to be thereafter issued.

Mr. COLE. That was the petition which complained that the field allowable was unnecessarily high and caused physical waste?

Mr. HARDWICKE. Yes, sir. At that time the total field allowable of oil was 445,000 barrels, almost exactly. I have before me now brief on motion for preliminary injunction from which apparently some of the quotations you have given came from, and in this brief on page 7, after setting forth the total field allowable of 690,000 barrels appears this statement: "Average daily production of oil under this order, considering shut-downs, is 445,000 barrels." In this brief, and in the affidavits which were filed in connection with and in support of supplemental petition seeking a preliminary injunction, the allegations of the supplemental petition were to the effect that the allowable of 445,000 barrels of oil, plus the amount of water which would be produced at that rate, would in due course, if continued, result in physical waste.

I shall be glad to have the affidavits sent to you, and you can introduce them in the record, if you care to do so; but the affidavits and this memorandum brief state that if an allowable of 690,000 barrels reduced to a real allowable of 445,000 barrels a day should be continued in effect for an appreciable length of time, the pressure would go down, bringing the gas out of solution, and waste would be caused.

I call your attention to the fact that this is a memorandum brief, and should be read in the light of the fact that the court had a lot of information, and that there was no need of putting exhaustive details in the brief. The judges had heard the evidence and the discussions, all through the case, and the brief was truly a memorandum, not an exhaustive statement of law and facts.

This language appears in the brief:

> Specifically, the high top allowable will cause waste by premature dissipation of reservoir energy by coning of water from the bottom and by channeling of water through the sand. Large quantities of oil will be trapped off or enveloped which otherwise would be produced by plaintiff and other operators in the field. The orders, therefore, are confiscatory. The high allowable is not dictated by the necessities of the case.

Now, obviously, in an injunction suit, you must assume that the order you are attacking and others like it will continue in force. Therefore the witnesses said, as their affidavits will clearly show, and this brief was prepared in the light of what I have said, that the high top allowable, ranging from 445,000 on up, if continued over a long period of time, would cause physical waste.

Mr. COLE. That is being continued, is it not?

Mr. HARDWICKE. No, sir.

Mr. COLE. Was not the order of January 24, 1940——

Mr. HARDWICKE. Now, just a moment; just a moment. Remember this hearing——

Mr. COLE. Let me, if I might finish my question.

Mr. HARDWICKE. Yes, sir.

Mr. COLE. In the last order, January 24, 1940, passed by the railroad commission, they continued order No. 23 in the same identical wording, did they not?

Mr. HARDWICKE. Yes, sir.

Mr. COLE. They continued that?

Mr. HARDWICKE. Yes, sir; absolutely.

Mr. COLE. Did that not continue this top allowable which was in existence?

Mr. HARDWICKE. No, sir. May I take it up in chronological order?

Mr. COLE. All right.

Mr. HARDWICKE. I will explain it. The preliminary injunction applied for in the December 1939 trial was based upon the supplemental petition, which in turn was based on the September 29 order which brought about an actual top allowable of 445,000 barrels, taking into account the shut-downs required by the commission. The court denied the preliminary injunction on the ground that, balancing conveniences, it was best not to disturb the situation, which, of course, did not settle the merits of the case at all.

The commission then entered its order of November 1, which also had an excessive top, so far as the rule itself was concerned, of about 691,000 barrels. There were 11 shut-down days, provided for in November, which left the actual top allowable at 439,000 barrels daily. The December arrangement was the same, being 12 shut-down days, making the actual allowable for the field 424,000 barrels.

During January the top allowable remained the same, but there were 13 shut-down days, which left the total actual allowable on a 31-day basis of only 400,000 barrels per day.

Now, that allowable of 400,000 barrels is to be distinguished from 445,000 which prevailed back in October.

The order of January 24, 1940, applicable for February, had the same paper top allowable of substantially 691,000 barrels; but, for the month of February, with only 29 days in the month, there were 12 shut-down days, which reduces the total actual allowable per day in February, under the January 24 order, to 405,258 barrels. The result is that between the order of September 29, 1939, and February 1, 1940, the commission had reduced the actual allowable for the field from 445,000 down to 405,000 or a difference of about 40,000 barrels per day on a monthly basis.

Now, the case was tried on its merits, beginning February 12; I think it was February 12.

By stipulation it was agreed that there would no no necessity to file any supplemental pleadings, covering orders subsequent to September 29, 1939, and, under the new rules, it probably was not necessary anyhow, inasmuch as the pleadings constituted an attack on any similar order to be issued.

Mr. COLE. May I interrupt again at that point?

Mr. HARDWICKE. Yes.

Mr. COLE. May I ask if the order of February 1 was not in effect the same as the September order.

Mr. HARDWICKE. So far as the top allowable fixed by the order, it is identical.

Mr. COLE. It is, so far as the top allowable is concerned; that is what I had in mind.

Mr. HARDWICKE. Yes.

Mr. COLE. The February order fixed the allowable at 691,393 barrels, did it not?

Mr. HARDWICKE. Yes, sir.

Mr. COLE. And you contend that that is too high?

Mr. HARDWICKE. Yes; if that amount is produced, yes, sir.

Mr. COLE. But, with the shut-down days, it works out all right?

Mr. HARDWICKE. With the shut-downs we will actually have a top allowable of 405,000 barrels?

Mr. COLE. Without the shut-down days, the allowable of 690,000 would, as you have stated, cause this physical waste, because it was unnecessarily high?

Mr. HARDWICKE. Yes, sir.

Mr. COLE. If it were continued in force?

Mr. HARDWICKE. Yes, sir.

Mr. COLE. So that the number of shut-down days in February in East Texas is admittedly the controlling if not the sole factor which determines or which prevents physical waste in that field. Is that a fair statement?

Mr. HARDWICKE. That is a little broad. I would say that however if you cut down the allowable you virtually control it. One method of reducing from 691,000 to a figure which does not produce physical waste is by shutting in the field whatever number of days it is necessary to bring that about.

Mr. COLE. What assurance is there that the railroad commission will continue a sufficient number of shut-down days to prevent this waste?

Mr. HARDWICKE. The testimony is that a figure of around 400,000 barrels, even with production of water at the present time, will not cause any appreciable amount of physical waste.

Now, whether the railroad commission will hereafter enter an order for enough shut-down days, or whether it will otherwise keep that figure around 405,000 barrels, I certainly do not know. There is no way in the world of finding out that I know of.

I do want to make this clear; when the case was tried on its merits, beginning February 12 or 13, 1940, the actual top allowable for the field under the commission's orders and shut-downs, with the shut-downs orders considered, was only 405,000 barrels for the month, which was within the range of what the engineers conceded to be a reasonable figure, without causing physical waste; consequently, during the trial of that case, no contention was made that the top allowable was too high, because the engineers thought it was all right. If, however, that top allowable had actually been 691,000 barrels, they certainly would have taken the position, and we would have argued and tried to prove that 691,000 barrels would, if continued over a long period of time, cause an excessive amount of physical waste, beyond any question.

Now, so that there may be no mistake about it, the Humble Oil & Refining Co. in this case did not withdraw any attack upon an excessively high allowable. It simply took the position that the allowable which was in existence when the case was tried on its merits in February 1940, was not high enough to warrant an attack upon it.

Mr. COLE. I think the chief counsel for the Humble Oil Co. made a statement that he considered the peak allowable too high, but he stated that because of the decrease which came about as a result of shut-downs they would not attack it.

Mr. HARDWICKE. That is right. And, for that matter, even in the hearings in October, the point was made that though the top allowable at that time, which was around 445,000 or 450,000 barrels, was too high, we were not particularly pressing the point. The thing in that suit that the company was particularly interested in was the distribution of the allowables among the operators in the field.

I thank you for the opportunity of clearing this up, Mr. Chairman.

Mr. COLE. Thank you.

We will stand adjourned until 10 o'clock tomorrow morning.

(Thereupon, at 5:05 p. m., the committee adjourned to meet at 10 o'clock the following morning, Tuesday, February 20, 1940.)

PETROLEUM INVESTIGATION

TUESDAY, FEBRUARY 20, 1940

House of Representatives,
Subcommittee of the Committee on
Interstate and Foreign Commerce,
Washington, D. C.

The subcommittee met, pursuant to adjournment, in the committee room, New House Office Building, at 10 a. m., Hon. William P. Cole, Jr., presiding.

Mr. Cole. The committee will please come to order.

As was announced yesterday, the Interstate Compact Commission asked to postpone their appearance from yesterday until today, Colonel Thompson still being ill. As Colonel Thompson will not be able to appear, former Governor Hiram M. Dow, it was announced yesterday, would represent the Commission. The committee is advised this morning that Governor Dow is sick and unable to present his statement. The statement is not very long, and the committee has not read it. It is important, and I think someone representing the Commission should read it to the committee. Who is present to appear for this Commission this morning?

STATEMENT OF ANDREW F. SCHOEPPEL, CHAIRMAN, CORPORATION COMMISSION OF KANSAS, AND MEMBER OF INTERSTATE OIL COMPACT COMMISSION, TOPEKA, KANS.

Mr. Schoeppel. Mr. Chairman, I will appear.

Mr. Cole. Who else, Mr. Schoeppel?

Mr. Schoeppel. And Mr. Jack Blalock is present to appear.

The Chairman. Mr. Blalock is presenting a brief.

Mr. Schoeppel. Yes; and will discuss any and all matters relating to the Compact that the committee may desire to hear, since Mr. Blalock has been interested in and had an intimate knowledge of the compact from its inception. And, of course, Mr. Orr, secretary of the compact is here if the Chair desires to hear him.

Mr. Cole. You are a member of the compact commission?

Mr. Schoeppel. I am.

Mr. Cole. We prefer to have the workings of the compact commission come from some member or official of that body.

Is Mr. Holloway to testify?

Mr. Schoeppel. He will be available to testify or furnish any information you desire.

Mr. Cole. I think it would be better if you would read Mr. Dow's statement for him, Mr. Schoeppel.

Mr. Schoeppel. Mr. Chairman, here is the position we are in this morning. As you know Colonel Thompson was designated to appear in behalf of the Compact Commission. Unfortunately he is ill, as the committee knows, and it was thought advisable that Mr. Dow, Governor Dow, of New Mexico, should present the compact's position in the absence of Colonel Thompson. Mr. Dow is sick at the Raleigh Hotel, and under the care of a doctor, and cannot be present.

In the statement that is prepared here, Mr. Dow and myself and other members of the compact collaborated together in the preparation of this statement, and I for and on behalf of Mr. Dow, this morning, and on behalf of the compact, desire to present this statement, because of the unfortunate situation we find ourselves in.

I do not know to what extent, because of the limited time that I have been a member of the compact, that I can go into all the matters in relation to the working of the compact.

Mr. Cole. Mr. Schoeppel, would it be agreeable to you to read Mr. Dow's statement, and then make such additional supplemental statement as you care to?

Mr. Schoeppel. All right.

Mr. Cole. Suppose that we proceed in that way.

Mr. Schoeppel. All right.

Mr. Cole. We have copies and can follow you.

STATEMENT OF HIRAM M. DOW, MEMBER OF THE INTERSTATE OIL COMPACT COMMISSION

Mr. Dow. Mr. Chairman and gentlemen of the committee: In my previous appearance before your body this month, I endeavored to combine my representation of the Interstate Oil Compact wth that of the Governor of New Mexico. I stated at that time that Col. E. O. Thompson, chairman of the Interstate Oil Compact Commission for 4 years, would make the appearance for the commission before you today. Since Colonel Thompson is seriously ill at his home in Austin, and will not be able to make an appearance before you, I will endeavor to outline briefly the organization, functions and accomplishments of the Interstate Oil Compact Commission.

There is already published on page 26 of your proceedings in your present investigation, Public Resolution No. 64, Seventy-fourth Congress, House Joint Resolution 407, consenting to an interstate oil compact to conserve oil and gas, which was executed in the city of Dallas on the 16th day of February, 1935 by the representatives of the States of Oklahoma, California, Texas, and New Mexico, and recommended for ratification by the States of Arkanssas, Colorado, Illinois, Kansas, and Michigan, and since ratified by the States of New Mexico, Kansas, Oklahoma, Illinois, Colorado and Texas, which original compact was deposited in the Department of State of the United States and was subsequently extended in 1937 and again in 1939. The original compact expired September 1, 1937. Prior to the expiration date it was extended by the member States for a period of 2 years. Prior to that expiration date it was again extended in 1939 by the States of Colorado, Kansas, New Mexico, Michigan, Oklahoma and Texas.

Public Resolution No. 57 of the Seventy-fifth Congress and House Report 1360 of the same Congress have already been made a part of your record on pages 56 and 57.

Public Resolution No. 31 of the Seventy-sixth Congress and House Report 1017 of the same Congress cover the third extension of the compact. This resolution and report are contained on pages 60 and 62 of the published record of your present hearings.

Subsequent to the execution and filing of the extended interstate oil compact in 1939 and the approval thereof by Congress, the State of Illinois, by appropriate legislative action, extended its membership in the compact for 2 years.

It will thus be noted that at present 7 States are members of the interstate oil compact, to wit: Colorado, Illinois, Kansas, Michigan, New Mexico, Oklahoma, and Texas.

The primary purpose of the compact as covered in article II is to conserve oil and gas by the prevention of physical waste thereof from any cause.

Each State entering the compact agreed to enact, within a reasonable time, adequate conservation laws, or if such laws had already been enacted, to continue them in force.

The usual types of waste were outlined as an object of prevention by the enactment and enforcement of adequate conservation laws, but the States were not limited to controlling specific types of waste outlined.

The articles of organization specifically provided that the powers of the compact be limited to conservation and the prevention of waste only within reasonable limits and specifically cited that it was not the purpose of the compact to limit production for stabilization of price-fixing purposes.

Membership in the Interstate Oil Compact Commission was limited to one representative from each State. The duty of the commission as outlined was—

> to make inquiry and ascertain from time to time such methods, practices, circumstances, and conditions as may be disclosed for bringing about conservation and prevention of physical waste of oil and gas and that at such intervals as said commission deemed proper it shall report its findings to the several States for adoption or rejection.

It was given further power—

> to recommend the coordination of the exercise of the police powers of the several States within their several jurisdictions to promote the maximum ultimate recovery of the petroleum reserves of the said States and to recommend measures for the ultimate maximum recovery of oil and gas.

Provision was made for organization rules and regulations for the conduct of business. Provision was also made that no action should be taken by the Commission except by a majority of the votes of the compacting States represented at any meeting and a majority of the allowable production of the several States for the preceding 6 months.

The meeting in Dallas in February 1935 at which the compact agreement was signed by governors of the various oil-producing States was a third such meeting of governors, prior meetings having been held at the home of Governor Marland in Ponca City, December 23, 1934 and January 3, 1935. After the signing of the agreement a committee was appointed to draft and submit to Congress the articles signed by the various governors. These articles were given the sanction of Congress August 27, 1935.

The first official meeting of the compact members was held in Oklahoma City, September 1935. The organization was perfected, officers elected, and a committee appointed to draft bylaws. Bylaws were offered for approval October 11, 1935, a copy of which is herewith submitted for the record.

Five years ago, when this compact commission was formed, your committee had just completed its first petroleum investigation. The evidence which you had accumulated pointed to the advisability of creating some constitutional coordinating body. Such a body was recommended by your committee and also by the Secretary of the Interior. As you will recall, in the gathering of the voluminous testimony in your first investigation, many States apparently seemed to be at cross purposes with each other. Their laws were not in all instances adequate; some were only fragmentary insofar as effective conservation is concerned. The first meetings of the compact verified this picture. The representatives of the various States attended the preliminary meetings with misgivings, and distrust one for the other. These feelings of distrust and suspicion gradually were replaced with friendly helpfulness as the representative of each State found their problems were much the same and that what seemed to be a compact of little authority, with no power of compulsion, gained strength and effectiveness as it began to mobilize the most powerful of all forces—public opinion.

The commission early realized the wide scope of its work and set about to accomplish the task by the broadest possible educational program. The first work of the compact was to consolidate the position of its various members and to smooth out the divergent opinions as to what constituted true conservation. This was brought about by the appointing of study committees on cooperation, coordination, and consumption, whose reports were studied, augmented, approved and disseminated to the public. When the press of the oil industry, and the general press for that matter, found that the sole purpose of the compact was to conduct an educational program for the benefit of conservation in general and for the purpose of coordinating the conservation laws of the various States, it lent the fullest cooperation. Prominent engineers, economists, and petroleum geologists were assigned subjects and invited to appear before the various compact meetings, which invitations invariably they accepted, all to the advancement of this general educational program.

Some of these nationally known professional men who have accepted the invitation of the compact and made one or more appearances before that body, are: Dr. Joseph E. Pogue, of the Chase National Bank of New York, nationally known economist; Dr Alexander Sachs, Dr. E. deGolyer; Dr. E. H. Wells, State geologist of New Mexico; Dr. A. G. White, Chief of the Petroleum Economics Division of the United States Bureau of Mines; Dr. F. B. Plummer of the University of Texas; Dr. V. L. Patton, of the University of Texas; Mr. Russell B. Brown; Mr. H. B. Fell, and Mr. Charles R. Roesser, all of the Independent Petroleum Association of America.

In addition to these men the compact has had within its personnel many men of high professional technical standing, and of long practical experience within the industry, who have assisted in carrying out the conservation studies and the dissemination of the knowledge gleaned, which is the primary object of the compact. Among these are Marvin Lee, of Kansas, C. C. Brown, of Oklahoma, and Dr. Alfred H. Bell, of Illinois.

The compact has also been fortunate in having from time to time the advice of men of the legal profession who have made specialized studies of the application of legal principles to conservation administration. Some of these are: Warwick M. Downing, of Colorado, Senator Clint C. Small, of Texas, Jack Blalock, of Texas, Elwood Fouts, of Texas, and Judge I. W. Keyes, of Texas, also Mr. R. E. Hardwicke, of Texas. We believe that these men are among the best that the legal profession and the oil industry afford, and we feel that the industry, as well as the Government, is indebted to them for their patience and the time which they have given the compact in furthering its work of dissemination of knowledge.

Not only has the compact had the well wishes of the President, but it has at various times met with the approval of the Secretary of the Interior and the Congress. Such approval has been noted when the renewal dates have come up for the extension of approval on the compact. When the compact agreement came up for extension of approval by Congress in 1937, Harold L. Ickes, Secretary of the Interior, transmitted to Cordell Hull, Secretary of State, the résumé of the work of the compact, in which he said:

> Examination of the transcripts of the meetings held by the Interstate Oil Compact Commission does not reveal any action taken by the Commission which might be regarded as being contrary to the restrictions agreed to in article V.

Also:

> The absence of formal recommendations does not indicate that progress has not been made along these lines.

And further:

> Some good is to be credited to the quarterly meetings of the State officials and industry representatives, but this is difficult of measurement although even a limited discussion of joint problems should contribute to a more sympathetic understanding of administrative and enforcement difficulties.

In this same communication the Secretary of the Interior called attention to the failure of the compact to issue "must" resolutions and indicated that the compact should take more vigorous action. Our counter to this is that the compact administration is not set up along military lines. Its effectiveness is not of the type that gets results from issuing orders by the governor to the governed, but it has chosen its own way which it thinks most effective, and that is, helpful cooperation among governing bodies.

The Congressional Committee on Mines and Mining had this to say when the renewal of congressional sanction came up in 1937:

> Interstate compacts such as this one are in complete harmony with the spirit of our American form of Government. They involve no use of force. They impose no prohibitions beyond those which are imposed by the States themselves.

And also this:

> This compact was originally approved by the Senate on August 24, 1935. It was then hoped that the oil-producing States getting together under this compact would be able to conserve these natural resources, prevent its waste, and aid the petroleum industry to achieve a stable situation. That it has had this effect has been demonstrated during the 2 years the compact has been in force.

The commission proceeded to establish permanent headquarters, employing a full-time paid secretary. It held and still holds quarterly meetings in the various oil-producing States. The minutes of these meetings do not and cannot reflect the vast amount of conciliatory and enlightening work that takes place in the informal sessions.

Usually for a day or more before the close of the meeting the representatives sit around at a round table and bring out their particular problems, which are inspected, aired, and discussed, usually resulting in a satisfactory and uniform disposition of the problem in each case. The commission is not endowed with any "must" powers, nor does it seek any. In most cases it has refrained from passing any specific resolutions as to what the States must do in order to obtain true conservation. For instance, in its work in assembling, analyzing, and digesting the conservation laws of the 20 oil-producing States it has done so in such a manner that any State which is particularly interested has available before it a complete analysis of what has been done before in a legal way in each and every phase of oil and gas conservation laws. The merits and demerits of each phase of each law has been brought out in round table discussion, all with the idea of allowing the interested party to arrive at his own conclusion by evaluating the majority opinion of other members.

We believe this method of disseminating knowledge and making recommendations is much more effective and brings speedier results to the State seeking the information on conservation legislation than would a coldly worded formal resolution to the effect that the interstate compact finds thus and so would be the best for any State. The attendance at these particular meetings is not limited to member States, for in addition to the member States other oil-producing States are invited to send representatives, which they frequently do. Over 500 invitations are sent out to officials in the various oil-producing States, to Federal officials and Department key men, and to oil-company officials and executives, economists, engineers, to newspapers, oil trade journals and other publications interested in oil conservation.

From the beginning many of the conservation officials, engineers, umpires, and others having directly to do with the enforcement of conservation laws began to attend these meetings and profit by the papers, discussions, and talks given by leaders of the industry, returning to their work in the various States where they disseminated the knowledge they gained through attendance at compact meetings, so that sound knowledge of conservation spread down to the ranks of the industry.

Right here we would like to introduce a certified copy of the minutes of all these meetings, as contained in the original minute book in the headquarters of the compact commission.

Usually from 80 to 90 percent of the oil production of the United States is represented at our meetings, either officially or as observers. The following States have from time to time sent representatives or observers to these quarterly meetings: Arizona, Arkansas, California, Delaware, Indiana, Kentucky, Louisiana, Ohio, Pennsylvania, West Virginia, and Wyoming.

As before mentioned, a program is arranged where prominent economists, engineers, lawyers, legislators, as well as Federal officials, deliver addresses and papers. These addresses, papers, and reports are bound with the transcripts of the meeting and distributed to the officials and regulatory bodies of the oil-producing States, to public libraries, colleges, and institutions, to the Bureau of Mines and the Geological Survey and other bodies of the Department of the Interior, to the Library of Congress, to newspapers, trade journals, and oil publications, and to the executives and leaders of the oil and gas industry. Some 700 copies of the full transcript of these hearings are mailed after each meeting.

At the time of the forming of the commission there was a general lack of adequate conservation statutes in the oil-producing States. One of the first needs of the industry developed by the compact was the compilation of a thorough analysis of the various conservation laws. This was done under the guidance of Homer Hoch, a former Member of Congress from Kansas, and was completed in a thorough and workmanlike manner. A copy of this report is available to your committee should you so desire. It covers 20 States and the United States public lands. It points out the manner of treatment by the various conservation laws of drilling, production, waste, transportation, storage, processing and refining, reports and records, along with miscellaneous aspects. Mr. Hoch had the cooperation of the chairman of the committee of the American Bar Association on the conservation of mineral resources in his work and the fullest cooperation of the legal staffs of the various States concerned, as well as that of prominent legal members of the industry. This work might be said to be monumental in character and formed the basis for determining the requirements of a model conservation law, which was later adopted by the various States, as hereinafter pointed out. Following the work of Judge Hoch and his committee, the mineral section of the American Bar Association completed a full symposium on conservation and conservation laws of the various States, which made available to oil-producing States desiring modern conservation statutes, a rounded-out compendium of all that is necessary to bring uniformity, efficiency, and effectiveness into oil-production regulations.

The efforts of the Interstate Oil Compact Commission has at all times been devoted to true conservation. A review of the modern advancement in the conservation laws of the States will disclose the influence of the educational work of the compact commission.

New Mexico, one of the most active of the compact States, was the first to comply with that part of its agreement covering the enactment of laws. In 1935, and prior to the ratification of the compact by Congress, this State enacted a comprehensive conservation law that was far in advance of all such laws at that time. I have reason to know personally that the act of New Mexico was not the product of the legal minds of our State alone, but the combined cooperation of the best legal and engineering talent of the various compact States.

In the State of Oklahoma, a pioneer in conservation legislation, amended conservation statutes also were made in 1935. Although Oklahoma is one of the oldest of the midcontinent oil producing States and had passed a conservation law in 1915 which was a model for its time, the development of producing practice in the industry had outgrown it. After the early Governors' conference and early compact meetings had turned the spotlight on the need for more advanced conservation regulations, Oklahoma passed this 1935 act as its first well spacing law. It shared the fate of most laws taking forward steps in that it was immediately attacked in court, but it was held constitutional by the United States Supreme Court, in *Patterson* v. *Stanolind*. The fact that the United States Supreme Court has held constitutional a law providing for the pooling of small tracts into adequate size well spacing units has been one of the big factors in making more uniform well spacing regulation effective in the various compact States.

In furthering the educational work of the compact one of the most fruitful acts was that of forming what might be termed a missionary group, the members becoming personal envoys to the various States contemplating legislative action in conservation. The Commission held one of its quarterly meetings in New Orleans in order to extend to that State a personal invitation to join the compact. Louisiana has passed Act No. 235 in 1936 which was a general conservation measure fashioned and patterned after the New Mexico law. Since enactment of this statute compact representatives have conferred with Governor Leche at Mineral Wells, Tex., and have continued their efforts to bring Louisiana into the compact as one of its most desired members. The present chairman of the compact has had the assurance of the present Governor that he will advocate to his legislature the membership of Louisiana in the compact.

In 1936 Mississippi amended its existing conservation law broadening the definition of waste and authorizing the limitation of production of oil and gas to the market demand. Governor-elect Johnson conferred at New Orleans in December last year where Mississippi was invited to become a member of the compact. The Mississippi Legislature is now in session and it is now our understanding that an adequate oil and gas conservation bill conforming with the more modern conservation laws will be introduced.

The secretary of the compact commission has from time to time furnished members of the Mississippi Legislature copies of the conservation laws of the other States.

The importance of Arkansas as an oil-producing State increased during the early life of the compact; work was done with that State in order to acquaint its officials with the benefits of true conservation. To be specific, in 1938 W. J. Holloway and C. C. Brown, Oklahoma representatives of the compact, made two trips to the Arkansas capitol at Little Rock for conference with Governor Bailey and his conservation board, renewing invitations for that State to become a member.

In October 1938 Governor Marland, Oklahoma's representative on the commission at that time, called an oil conference at Hot Springs, Ark., where Governor Marland of Oklahoma and Governor Miles of New Mexico acquainted Governor Bailey with the need for a modern conservation act and urged Governor Bailey to use his best efforts to bring the State into membership.

On February 20, 1939, a comprehensive conservation law was enacted for Arkansas, mainly through the untiring efforts of Governor Bailey. This law, while patterned after the New Mexico law, has been expanded to meet some of the needs that are peculiar to the State of Arkansas. In March 1939 Governor Phillips of Oklahoma headed a delegation to Fort Smith, Ark., where they met with Governor Bailey to assist him in putting into operation the machinery to allow Arkansas to become a member.

Kansas, an early member of the compact, gave full cooperation from the beginning as well as doing a good job of enforcing conservation, but after the need of adequate well spacing regulation was developed within the compact, Kansas sought the advantage of better well spacing regulations for obtaining more effective conservation in a new statute. In 1939 it enacted its senate bill No. 185, modernizing its law and embodying the best features of the other States. The fact that Kansas was a member of the compact played an important part in the passage of the bill. Senator Jones, sponsoring the bill, argued on the floor of the senate that the State by its compact membership was obligated to enact such a law and that Kansas should fulfill that obligation by enacting the bill, which it did.

Early in May 1939 the State of Michigan officially joined the compact and at the same time enacted a sound oil and gas conservation law. The Michigan law follows substantially the principles of the laws of New Mexico, Arkansas, and Kansas. Enactment of Michigan's conservation law was the culmination of educational work done by the compact and participated in practically all of its meetings by representatives from that State. Michigan not only passed a conservation law in 1939 but also officially became a member of the compact, having fulfilled all the requirements for full-fledged membership.

One of the first overtures of the compact toward the State of California was to hold an unofficial meeting of most of its representatives in Los Angeles in November 1935. During this meeting the representatives of the compact called upon Governor Merriam, discussing with him conservation laws and the work of the compact in general. They invited California at that time officially to become a member. As a result of this act of the compact, California sent representatives to many of its subsequent meetings. Agitation was begun in California for a more comprehensive conservation law, the Atkinson bill which was framed and passed in 1939. The enforcement of this bill was suspended pending vote of the people on a referendum. During the inter m pending the vote of the people on a referendum, compact members were active in sending telegrams and urging upon the Governor and various committees the acceptance of the conservation law in California. This activity was cooperative with like action by the President of the United States, the Secretary of the Interior, and Army and Navy officials. During the campaign preceeding the vote on the referendum petitions the chairman of the interstate oil compact, Col. E. O. Thompson, again went to California in support of the Atkinson bill. Although the Atkinson bill was defeated at the polls the compact still remains active in its conservation work with California. Governor Phillips of Oklahoma, now the chairman of the compact commission, is scheduled to make another trip to California in early March to renew activity for an adequate conservation bill.

The compact meeting in September 1938 in Tulsa was attended by Governors Horner of Illinois, Allred of Texas, Marland of Oklahoma, Townsend of Indiana, and McMullen of Delaware, and Governors-elect O'Daniel of Texas and Phillips of Oklahoma. Up to this time Illinois had been classed as a stripper well State, whose total daily production did not enter materially into the general market. However, due to the discovery of new fields in Illinois at this time agitation for a new conservation bill had come up. The need for this was discussed throughly by Governor Horner with the other governors. Governor Horner assured them that he would do everything possible toward the passage of an adequate conservation law for Illinois.

In February 1939 Governor Phillips of Oklahoma along with other representatives of the compact commission, met Acting Governor

John Stelle of Illinois at St. Louis, Mo., for the purpose of discussing the conservation law situation in Illinois at that time. With the coming of flush production in Illinois the same opposition to adequate conservation laws had developed which had developed heretofore in all the other States during preconservation days before the molding of public opinion forced the necessity of conservation on the majority of the operators. Forces for better regulation have been constantly at work in Illinois and the compact is lending every assistance, with the conviction that Illinois will soon pass through the turmoil period and emerge to a true conservation state in the near future.

While conservation has not been a serious problem in the State of Kentucky, the compact has worked with that State as with the others in furthering better conservation laws in advance of accelerated oil development. In 1938 and again in 1939 Col. E. O. Thompson, as chairman of the compact, addressed conferences and attended meetings in the State of Kentucky advocating adequate oil conservation and the membership of that State in the interstate oil compact.

In February 1939 Governor Phillips of Oklahoma, along with compact representatives, conferred with Governor Chandler upon the subject of the membership of Kentucky in the compact.

There has recently been introduced in the Legislature of Kentucky senate bill 66, which meets all requirements for a modern oil- and gas-conservation law and authorizes the membership of the State of Kentucky in the compact. Governor Phillips of Oklahoma has assurance of the present administration of Kentucky that this senate bill 66 has its full support and has every probability of becoming law. The secretary of the compact cooperated with the author of the senate bill during his drawing of the bill, furnishing the compact's tabulation of the conservation bills of the various States and literature showing the organization functions and purposes of the compact.

The States of Wyoming, Montana, and Utah have also been visited by representatives of the interstate oil compact in the furtherance of their educational program on true conservation. The compact has the assurance of Governor Ayres of Montana and Governor Smith of Wyoming that they will recommend to their respective legislatures compact membership.

The foregoing are specific instances where members of the compact have given fullest cooperation to various oil-producing States in furthering the effectiveness of their present laws or in passing new and more comprehensive laws. In addition to this, various members of the compact have appeared before various educational institutions, including State universities, schools of mines, national meetings of various engineering societies, as well as before meetings and conventions of the various oil organizations; all for the enlightenment of those bodies as to the aspects of true conservation.

The compact, sponsored as it is by the highest authority in each State, is always given the greatest consideration in its efforts in educational work.

Most of the Governors whose States are represented are ready at all times to make personal appearances such as that made by Governor Phillips at the Southern Governor's Conference at Nashville, Tenn. Oil conservation is injected as a problem and given major consideration.

Not only has the compact directed its efforts toward the fullest cooperation among the States, but has included also those divisions of the Interior Department having to do with production, conservation of oil and gas, and mineral resources, namely, the Bureau of Mines, and the United States Geological Survey, but it has invited the executive members of the Petroleum Conservation Division of the Department of the Interior to its quarterly meetings. Early in its work the compact put the stamp of approval upon the Bureau of Mines' estimate for determining market demand. Dr. A. G. White has made a personal appearance at most of the quarterly meetings and given very instructive and enlightening discussions on the work of the Bureau in ascertaining marketing demand. The compact is appreciative of the work of Dr. White and his directing officers, including Dr. Finch.

The sanction of the Bureau of Mines' estimate of demand as a standard by the compact was not made without a thorough investigation of the painstaking efforts and careful analysis made by the Bureau in arriving at its conclusions in estimating the petroleum demand. Early in the life of the compact a special committee was delegated to visit the Bureau of Mines headquarters in Washington, where, among other things, they found that the Bureau was handicapped through lack of sufficient funds for carrying on the type of investigation work which it felt necessary in estimating demand. The compact extended its educational work in connection with the Bureau of Mines requirements to Members of Congress, with the result that the Bureau's appropriation was increased to the extent that it was able to carry on its market demand work with efficiency and dispatch. Even after this committee had visited Washington and returned to make a report to the compact, there was still some dissatisfaction among the States as to the forecast of the national market among them. Naturally each State was desirous of obtaining as large an amount of the national market as possible. Another committee was appointed, which spent several days with the Bureau until it was thoroughly satisfied that the methods of the Bureau were all that could be desired, and that its action was thoroughly impartial and influenced only by its factual findings.

At various times since the work of these two committees, members of the different States have contacted the Bureau, feeling that their State may possibly be entitled to more of the national market, but in each case the Bureau seems to have been able to satisfy the complainant of the justness of the Bureau's findings. After having undergone this test the compact feels that the Bureau, which is endowed with no more power that the compact, being merely a fact-finding and information-disseminating body, is a model to other Federal agencies who seek to influence conservation work in the several States.

I might add that not only have the representative States been convinced of the soundness of the forecast of the national demand market through the efforts of the compact, but even its individual members have had to change their positions materially on account of the studies, contacts, and round-table discussions had within the compact.

Although the compact is just what its title indicates, an interstate organization, invitations have been extended to interested departments of the Federal Government, as well as to all nonmember oil-producing States to assist it in carrying on its sole duty, which is educational work. The response has been gratifying and the compact is appreciative of the cooperation which has followed the invitations extended.

In retrospect we would like to go back 5 years to that time when the work of your committee first pointed out the need for an organization such as ours. From the conditions which you found in your first investigation, we feel the oil industry has come a long way. The wasteful methods of those days have been throttled to a minimum. Flush production as we knew it then is a thing of the past now. Gas wastage which you found 5 years ago has been steadily reduced during the intervening time, so that now by the Department of the Interior's own evidence, it is down to an almost irreducible minimum. The interstate compact, coordinating at the very top, the conservation efforts of all the various States, claims the major credit for this work, which has been truly conservation. Had not antagonism and rivalry of the various oil-producing States been overcome by the friendly cooperative attitude engendered by the compact no such improvement as we have witnessed could have taken place. No group of men, nor group of States for that matter, can accomplish worth-while results when each works at cross-purposes and against the other. This spirit of mutual cooperation developed first within the compact and widened to the conservation administrative bodies of the various States. We feel that with such a record behind it all the interstate oil compact needs and asks is unhampered freedom to carry on the molding of public opinion which it has set as its goal, to the end that the general uniformity of laws, and their enforcement, will in the near future become ideal in all oil-producing States.

STATEMENT OF ANDREW F. SCHOEPPEL—Resumed

Mr. Cole. Mr. Schoeppel, we will be glad to hear you further.

Mr. Schoeppel. Well, I may state, I have been a member of the regulatory body of my State and have been privileged to attend the interstate oil compact meetings for a little over or in the neighborhood of 1 year. I personally know that from my experience in connection with the compact work, that when you sit around the table with representatives of the various regulatory bodies of the State and with the various members of the compacting States, and discuss with them your problems, and they with you their problems, that we have a better mutual understanding of our common problems; that as a result of that States have been in a position to compare notes and to accomplish a lot of things that never probably would have been accomplished within the short space of time that we have been functioning.

I feel that that is a great step forward in the oil industry. I know, frankly from that, from the standpoint of my State, that some of the attitudes expressed and some of the practices that we have put into force and effect could not have been successful, as they are, without the cooperation of the other compacting States, and the information gleaned and gained from those compact meetings and that mutual respect that followed the meetings of those great State organizations and the members representing the various States.

I do not know that I have a lot to add, although I do know, and I do feel, that a period of 5 or 6 or 7 years is an awfully short time to gage or pass judgment upon the good that might result from such an organization as the interstate oil compact.

As I stated to you before, I think that Colonel Thompson at New Orleans indicated that information on behalf of the compact, that refers to the legal position of the compact, would be before the committee, and Colonel Thompson has indicated that owing to his illness that Mr. Jack Blalock is here available for the presentation of that or other pertinent data which the committee might desire.

Mr. Cole. Yes; I have a letter from Colonel Thompson to that effect and the committee will be very glad to hear from Mr. Blalock later.

Does Mr. Holloway wish to make a statement?

Mr. Schoeppel. He is present.

Mr. Cole. Governor Holloway, were you not a member of the committee of three representing the compact?

Mr. William J. Holloway. Mr. Chairman, I was not a member of the committee of three. That was Colonel Thompson, Governor Dow, and Mr. Schoeppel.

Mr. Cole. All right.

Mr. Schoeppel. I will hand to the reporter a copy of the bylaws. And also the minutes of the interstate compact.

Mr. Cole. Mr. Schoeppel, have you finished your statement?

Mr. Schoeppel. Yes.

Mr. Cole. Mr. Wolverton wants to ask you some questions.

Mr. Wolverton. Mr. Schoeppel, will you give me a copy of the call that was issued for the meeting of the State compact commission that was called in August last to deal with the question of the lowered price of crude oil that had been posted by one of the major companies?

Mr. Schoeppel. You say can I give you a copy of the minutes of that meeting?

Mr. Wolverton. No; I asked you for it.

Mr. Schoeppel. For a copy? I think that I can furnish that.

Mr. Wolverton. I asked for a copy of the call that was issued for that meeting.

Mr. Schoeppel. I will have to refer that to Mr. Orr, the secretary. We can furnish that. That was in the form of a telegram, as I understand, forwarded to the various State members of the compact. I can furnish that to you, Congressman Wolverton.

Mr. Wolverton. Is it not here? I asked for all of this material in New Orleans.

STATEMENT OF CHARLES L. ORR, SECRETARY, INTERSTATE OIL COMPACT COMMISSION

Mr. Orr. I am secretary of the compact commission at this time. There was no call issued from the secretary's office for that meeting. As I understand it, Colonel Thompson from Austin telephoned, through telephonic communications, and by telegrams to the various States arranged for the meeting. So, there is no record in the office of the compact of any call of that meeting.

Mr. Wolverton. I notice in the statement that was just read, that "over 500 invitations were sent out to officials in the various oil-producing States, to Federal officials and department key men, and to all company officials and executives, economists, engineers, to newspapers, oil trade journals, and other publications interested in oil conservation."

Mr. Orr. Yes, sir.

Mr. Wolverton. Was an invitation sent to that group?

Mr. Orr. That meeting, Mr. Chairman——

Mr. WOLVERTON. Pardon me. Was an invitation sent to that group?

Mr. ORR. No, sir.

Mr. WOLVERTON. That is to 500 to attend the oil compact meeting in August last?

Mr. ORR. Not from the office of the secretary.

Mr. WOLVERTON. How did you folks representing different States all get together?

Mr. ORR. Why, I think the chairman of the commission personally nvited them to attend the meeting at Oklahoma City.

Mr. WOLVERTON. Was there any consultation with you as secretary of the commission before the chairman requested their attendance?

Mr. ORR. I was not secretary of the commission then.

Mr. WOLVERTON. Have you any knowledge concerning the circumstances under which the call was issued other than what you have testified to?

Mr. ORR. The only knowledge I have is that telegrams and telephone messages were sent by Colonel Thompson.

Mr. WOLVERTON. You were not secretary at that time?

Mr. ORR. No, sir.

Mr. WOLVERTON. Who was?

Mr. ORR. Art L. Walker.

Mr. WOLVERTON. Is he here in the room?

Mr. ORR. He did not attend the meeting. He was sick at the time.

Mr. WOLVERTON. Between those who were sick at that time and those who are sick now, it does not look to me as though we are going to get much information.

Mr. ORR. Well, it was unfortunate, sir.

Mr. WOLVERTON. It is unfortunate.

When this committee met in New Orleans an interest was indicated by the members in the purpose of the compact meeting that was held in August last, the purpose of which seemed to be understood from the newspaper clippings, but we asked for authoritative statements as to the purpose of the meeting; what was discussed; what was decided upon and Colonel Thompson at that time stated that he would make all of that available to us. Now, unfortunately, he is ill and not here at this meeting. The secretary who was in office at that time unfortunately was sick at the time of the meeting, and unfortunately is not the secretary at the present time.

Will you tell me how we can get the information we are seeking?

Mr. ORR. In this copy of the minutes, there are the minutes of that meeting, special meeting [handing minute book to Mr. Wolverton] which shows the meeting, those attending, and general discussion and action of the commission.

Mr. WOLVERTON. To ask us to come here and read minutes, copies of which were made in August last, and yet not presented to the committee until this morning is unfortunate. You could have saved much time if they had been presented to us at an earlier date.

Mr. SCHOEPPEL. I may say, Mr. Chairman, owing to the illness of Colonel Thompson, as well as Governor Dow, that I am quite sure and that I know that either of those gentlemen as quickly as they return to normal health will be glad to appear before this committee and present any matter that is within their knowledge for the benefit of the committee. We do not feel, frankly, as though we are responsible for the unfortunate situation that has developed. Naturally the Interstate Oil Compact Commission felt that Colonel Thompson, in view of the questions asked at the New Orleans meeting, should represent the compact here. I know that the colonel expected to be here, because he called me and I was informed of his illness.

Neither did we anticipate that Governor Dow was goind to be in the condition he is in at the present time. So, make the suggestion in all seriousness, and I am sincere certainly, that those gentlemen be granted an opportunity to appear, and especially Colonel Thompson, who has all of the background of this compact, and I sincerely hope that he will be given an opportunity to appear.

Mr. Cole. Yesterday and today, in conference with a group here, I prophesied just what is taking place here. Colonel Thompson is the only man who has been with the compact for the entire life of the compact and can answer the questions freely, without losing so much time, which were presented to him in New Orleans and which would be asked here today. The committee does not want to take any advantage of the compact commission, because of the unfortunate illness of these gentlemen, and if it is your wish that the compact commission be heard further by the committee after Colonel Thompson's recovery—I understand that his illness is of a temporary nature—we will try to so arrange.

Mr. Schoeppel. That is correct.

Mr. Cole. We think a great deal of Colonel Thompson and his opinions, and we would like to hear him.

Mr. Schoeppel. I will say to the committee that we will be only too happy to have him come here, because that is the idea that he had when he went back home. He would not have gone back had it not been for that Federal court case which required his presence.

Mr. Cole. I have some questions to ask of the commission myself which I am quite sure you cannot answer.

Mr. Schoeppel. I appreciate that, Mr. Chairman, and I would not want to attempt to answer something that I do not know anything about; but we will be glad to have Colonel Thompson here as quickly as he can be available if the committee will designate some specified time when he and Mr. Dow could be heard, I know that they will be glad to be heard.

Mr. Wolverton. The handicap arises, as I see it, not only through the absence of Colonel Thompson, who is probably the outstanding spokesman for the commission, but the secretary of that important meeting in August last is no longer the secretary of the commission. My slight observation of these minutes would indicate that they do not cover the situation that I am interested in knowing about. I think that the individuals who were present, especially Colonel Thompson, should be present to state specifically in answer to our questions what was actually done at that meeting in August last, and I am fully in accord with the suggestion that has been made by the chairman (Mr. Cole), to hear Colonel Thompson at a later date.

Mr. Holloway. Mr. Chairman, Mr. Art Walker has been the secretary of this commission up until about August, from the beginning up until about last September. On June 14, five doctors gave him a verdict that he could not work any more, and that is permanent. We waited on him for 90 days hoping that he could regain his health;

but finally they gave him a final verdict and then is when Mr. Orr was elected secretary.

I hope the committee will not feel that anyone who is present or absent is trying to conceal anything from this committee.

Mr. COLE. Not at all, Governor.

Mr. HOLLOWAY. That is not the position we are in.

Mr. COLE. I hope that you will not even entertain such a thought, because there is nothing in the minds of this committee along that line, and no occasion for that statement.

Mr. HOLLOWAY. Mr. Walker is ill.

Mr. COLE. There is just no feeling of that kind at this end of the room.

Mr. WOLVERTON. What we do want is some witness who knows something about it.

Mr. HOLLOWAY. Mr. Wolverton, obviously, the men who have been connected with the compact longest would know more about it. And, the illness of Colonel Thompson prevents him from being here. He was here to testify and the committee could not reach him. It was not your fault. But, it certainly was not his. And then, Governor Dow is very seriously ill at the hotel. He had a doctor twice last night. He has influenza and is threatened with pneumonia. We cannot help that and he cannot help it. And I do not feel that we ought to be put in the attitude that we are trying to obstruct this hearing, because some of us have stayed away from home a good while doing our best.

Mr. WOLVERTON. I do not think anything has been said or even thought, except what you have said, that would even cause anyone to think that.

Mr. HOLLOWAY. The inference——

Mr. WOLVERTON. And, there is no inference that can be drawn from it. There is nothing other than the statement that we want a witness who knows something about it. There has not been a thought in the mind of anyone on this committee that anybody was purposely ill. Even the thought of it is so ridiculous that it seems more ridiculous to answer it. I cannot see any basis for you even having the thought that we might have had that thought.

Mr. SCHOEPPEL. As I indicated a moment ago——

Mr. COLE (interposing). As I understand you, Mr. Schoeppel, the suggestion I made a moment ago appeals to you?

Mr. SCHOEPPEL. It does.

Mr. COLE. And I am sure that it does to some of the others.

Mr. SCHOEPPEL. I shall be very glad to see that those gentlemen are both present, if the committee will indicate the probable dates they desire to hear those men.

Mr. COLE. Mr. Schoeppel, will you, and Mr. Blalock and Mr. Holloway come up here for just a moment?

(After informal conference at the bench, the following proceedings were had:)

Mr. COLE. All right, gentlemen; the committee will be in order.

The committee understands that the industry instead of waiting until tomorrow is ready to proceed today. At this point we will hear Mr. Blalock and then this afternoon we will continue with witnesses on behalf of the industry, the first of whom will be Mr. Schilthuis.

INTERSTATE OIL COMPACT

ARTICLE I

This agreement may become effective within any compacting State at any time as prescribed by that State, and shall become effective within those States ratifying it whenever any three of the States of Texas, Oklahoma, California, Kansas, and New Mexico have ratified and Congress has given its consent. Any oil-producing State may become a party hereto as hereinafter provided.

ARTICLE II

The purpose of this compact is to conserve oil and gas by the prevention of physical waste thereof from any cause.

ARTILCE III

Each State bound hereby agrees that within a reasonable time it will enact laws, or if laws have been enacted, then it agrees to continue the same in force, to accomplish within reasonable limits the prevention of—(*a*) The operation of any oil well with an inefficient gas-oil ratio; (*b*) the drowning with water of any stratum capable of producing oil or gas, or both oil and gas in paying quantities; (*c*) the avoidable escape into the open air or the wasteful burning of gas from a natural-gas well; (*d*) the creation of unnecessary fire hazards; (*e*) the drilling, equipping, locating, spacing, or operating of a well or wells so as to bring about physical waste of oil or gas or loss in the ultimate recovery thereof; (*f*) the inefficient, excessive or improper use of the reservoir energy in producing any well.

The enumeration of the foregoing subjects shall not limit the scope of the authority of any State.

ARTICLE IV

Each State bound hereby agrees that it will, within a reasonable time, enact statutes, or if such statutes have been enacted then that it will continue the same in force, providing in effect that oil produced in violation of its valid oil and/or gas conservation statutes or any valid rule, order or regulation promulgated thereunder, shall be denied access to commerce; and providing for stringent penalties for the waste of either oil or gas.

ARTICLE V

It is not the purpose of this compact to authorize the States joining herein to limit the production of oil or gas for the purpose of stabilizing or fixing the price thereof, or create or perpetuate monopoly, or to promote regimentation, but is limited to the purpose of conserving oil and gas and preventing the avoidable waste thereof within reasonable limitations.

ARTICLE VI

Each State joining herein shall appoint one representative to a Commission hereby constituted and designated as "The Interstate Oil Compact Commission," the duty of which said Commission shall be to make inquiry and ascertain from time to time such methods, practices, circumstances, and conditions as may be disclosed for bringing about conservation and the prevention of physical waste of oil and gas, and at such intervals as said Commission deems beneficial it shall report its findings and recommendations to the several States for adoption or rejection.

The Commission shall have power to recommend the coordination of the exercise of the police powers of the several States within their several jurisdictions to promote the maximum ultimate recovery from the petroleum reserves of said States, and to recommend measures for the maximum ultimate recovery of oil and gas. Said Commission shall organize and adopt suitable rules and regulations for the conduct of its business.

No action shall be taken by the Commission except: (1) By the affirmative votes of the majority of the whole number of the compacting States, represented at any meeting; and, (2) by a concurring vote of a majority in interest of the compacting States at said meeting, such interest to be determined as follows: Such vote of each State shall be in the decimal proportion fixed by the ratio of its daily average production during the preceding calendar half-year to the daily average production of the compacting States during said period.

ARTICLE VII

No State by joining herein shall become financially obligated to any other State, nor shall the breach of the terms hereof by any State subject such State to financial responsibility to the other States joining herein.

ARTICLE VIII

This compact shall expire September 1, 1937. But any State joining herein may, upon 60 days' notice, withdraw here from.

The representatives of the signatory States have signed this agreement in a single original which shall be deposited in the archives of the Department of State of the United States, and a duly certified copy shall be forwarded to the Governor of each of the signatory States.

This compact shall become effective when ratified and approved as provided in article 1. Any oil producing State may become a party hereto by affixing its signature to a counterpart to be similarly deposited, certified, and ratified.

Done in the city of Dallas, Tex., this 16th day of February 1935.

Bylaws of the Interstate Oil Compact Commission

ARTICLE I. THE NAME AND STRUCTURE OF THE COMMISSION

Section 1. The commission created by virtue of the Oil States Compact which is fully set forth in the resolutions of the House and Senate of the Seventy-fourth Congress of the United States consenting thereto was organized at the first meeting of the signatory States ratifying said compact duly convened and held at Oklahoma City on September 12, 1935. The commission as presently constituted is composed of one acting representative from each of the following compacting States: Colorado, Illinois, Kansas, New Mexico, Oklahoma, and Texas. The commission shall add to its body the representatives of such other oil-producing States as shall ratify the compact and appoint representatives to the commission. The commission shall be designated "The Interstate Oil Compact Commission," snd will be referred to herein as "The commission."

Sec. 2. The commission shall be a fact-finding and deliverative body with the power to make recommendations to the member States. It shall have no official seal. Its official actions shall be taken in accordance with these bylaws and said compact; the verity of its transactions shall be established by written report thereof, certified to be the action of the commission under the signature of its chairman and secretary.

Sec. 3. The headquarters of the commission shall be at the place of residence of the chairman thereof, and communications addressed to it shall be in care of and at the address of its chairman.

ARTICLE II. TIME AND PLACE OF MEETING

Section 1. Regular meetings of the commission shall be held quarterly on the second Friday at 10 o'clock, a. m., standard time, of the month of which the quarter falls, the first of said meetings after the adoption of these bylaws to be the second Friday in December 1935.

Sec. 2. Upon the written request of sufficient representatives of the member States to constitute a quorum, setting forth the purpose, special meetings of the commission shall be called by the chairman of the commission.

Sec. 3. As a part of its regular order of business the commission at each regular meeting shall select the time and place of special meetings with a view to the accommodation of all the commission members.

ARTICLE III. NOTICE OF MEETINGS

Section 1. The chairman shall cause the secretary to mail to the address of the representative of each compacting State, by registered mail under form for the demand of return receipt thereof, notice in writing of the time and place of all regular meetings, and of the time, place, and purpose of all special meetings, said notice to be posted not less than 10 days prior to the meeting. Where a compacting State may be represented by its governor or an alternate, whose name and credentials have been furnished the commission, notice shall be given both.

SEC. 2. The giving of notice as herein provided may be waived in writing or by telegram by each several representative of the compacting States, and as to the representative of such State any meeting held in accordance with such waiver shall be valid.

ARTICLE IV. THE POWER OF THE COMMISSION AND THE PURPOSE OF MEETINGS

SECTION 1. The powers of the commission shall be as provided in the Oil States Compact. All findings of fact and recommendations made by the commission in accordance therewith shall be evidenced by resolution duly passed by vote in accordance with these bylaws and said compact.

ARTICLE V. THE QUORUM AND VOTING

SECTION 1. To constitute a quorum at any meeting of the commission or at any time during such meeting, there shall be present a majority of the members of the commission. Any number less than a quorum may adjourn the meeting from time to time.

SEC. 2. All action taken by the commission shall be as the members present may elect, either by viva voce or by written ballot, taken in accordance with the following formula: (1) By the affirmative votes of the majority of the whole number of compacting States, represented at the meeting; and (2) by a concurring vote of a majority in interest of the compacting States at said meeting, such interest to be determined as follows: Such vote of each State shall be in the decimal proportion fixed by the ratio of its daily average production during the preceding calendar half-year to the daily average production of the compacting States during said period.

SEC. 3. The certificate of the Bureau of Mines of the United States shall be prima facie evidence of the daily average production of each compacting State during the preceding calendar half-year and of the daily average production of the compacting States during said period. Other evidence of said facts at the instance of any State shall be received and acted upon by the commission.

SEC. 4. Except as otherwise provided by these bylaws and said compact, all meetings of the commission shall be conducted in accordance with general parliamentary rules.

SEC. 5. Each State which is now or may hereafter become a member of the compact shall deposit with the secretary of the commission its official certificate and designation of the name of its representative, together with his permament address, and if it have an alternate, then also of his name and address. Notice of meetings and the transmittal of other written communication from the commission to such State shall be made to said representative, and, if there be an alternate, also to the alternate.

ARTICLE VI. OFFICERS AND COMMITTEES

SECTION 1. The officers of the commission shall consist of a chairman, first vice chairman, and second vice chairman, each of whom must be a member of the commission. There shall also be a secretary and such assistant secretaries as may be needed, who shall not be required to be members of the commission. Said officers shall be elected by the commission at the quarterly meeting held in September of each year and shall hold office for a period of 1 year or until their successors are selected in accordance with these bylaws and have assumed office. Proved, the officers of the commission, serving at the time of the adoption of these bylaws shall serve until their successors are duly elected and qualified as herein provided.

SEC. 2. The sole duty of the chairman in his official capacity as such, shall be to preside at all meetings; to call and provide for notice of meetings; and to perform such other duties as may be placed on him by resolution of the commission. But in his capacity as representative of his State he shall exercise all the powers and duties of a member of the commission. In case of the absence or inability to act of the chairman, the first vice chairman shall act, and in the case of his absence or inability to act, the second vice chairman shall act.

SEC. 3. The secretary shall make or cause to be made a record of all transactions taken at each meeting, shall preserve the same, shall keep among such records the official credentials of the representatives, give notice of the meetings as herein required, and otherwise perform the duties customarily performed by the Secretary of a deliberative body.

Sec. 4. Each State shall compensate and bear the expenses of its own representative in such manner and to such extent as it may provide. The representative of any State who is selected as permament chairman shall have the right, subject to approval of the commission, to select the secretary and shall in such case make provision for his services without cost to the commission. The commission is forbidden to accept the donation of funds for any purpose except funds as may be provided by member States through their representatives and then only by resolution of the commission duly passed wherein provision shall be made for the disposition of such funds.

Sec. 5. There shall be such temporary and permament committees created and the membership and chairman thereof appointed by the chairman of the commission, subject to confirmation by the commission, as the chairman and the commission from time to time may determine. Committees which in such manner have become established as permanent committees shall have their membership and chairman named by the chairman of the commission at the meeting of his election, which meeting shall confirm or reject such appointments.

ARTICLE VII. AMENDMENTS TO BYLAWS

These bylaws may be altered and amended at any regular meeting upon vote by the commission as herein provided, upon condition that notice of such change or amendment was first given to the representatives of each compacting State 30 days prior to the meeting.

Minutes of the Organization Meeting of the Interstate Oil Compact Commission Held in the State Capitol, Oklahoma City, Oklahoma, September 12, 1935

The meeting was called to order by E. W. Marland, Governor of Oklahoma, temporary chairman.

The following representatives of member States were present:

Texas—Governor James V. Allred, Ernest O. Thompson.

Kansas—Governor Alf M. Landon, Homer Hoch, Carl Minor, T. C. Johnson, John D. Shawver, Ralph Pryor.

New Mexico.—Hiram M. Dow.

Colorado.—H. C. Bretschneider.

Illinois.—William Bell.

Oklahoma.—Governor E. W. Marland, Tom Anglin.

Representatives of nonmember States present were:

Arkansas.—Jeff Davis, J. W. Olvey.

Wyoming.—Pierre La Fleiche.

Michigan.—W. J. Fitzgerald, F. R. Frye.

Governor E. W. Marland was elected temporary chairman.

After general discussion of the organization of the Interstate Oil Compact Commission, the credentials were filed by the Representatives of the compacting States.

The meeting then proceeded to the election of officers. The following officers were elected: Chairman, Governor E. W. Marland; vice chairman, Ernest O. Thompson; vice chairman, Homer Hoch; secretary, Art L. Walker.

Motion was duly made, seconded, and carried that the Chairman appoint members for the following committees: By-laws Committee, Committee on Coordination of Police Powers of Member States, and Committee on Conservation.

The following were appointed by the Chairman as members of these committees, to wit:

Bylaws committee.—Hiram M. Dow, chairman, Ernest O. Thompson, William Bell.

Coordination of police powers of member-States.—Ernest O. Thompson, chairman, Homer Hoch, Tom Anglin.

Conservation committee.—Homer Hoch, Chairman, Ernest O. Thompson, Hiram M. Dow, H. C. Bretschneider, William Bell, Tom Anglin.

On motion duly made, seconded, and carried the meeting adjourned until the 11th day of October 1935.

E. W. Marland, *Chairman.*

Attest:

Art L. Walker, *Secretary.*

MINUTES OF THE MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE CAPITOL BUILDING, OKLAHOMA CITY, OKLA., OCTOBER 11, 1935

Meeting was called to order by Gov. E. W. Marland, Oklahoma, chairman.

Minutes of the previous meeting held in September 12, 1935, read and approved.

On the roll call the following States answered present:

Colorado.—Mr. H. C. Bretschneider.
Illinois.—Mr. William Bell.
New Mexico.—Mr. Hiram M. Dow.
Kansas.—Mr. Homer Hoch.
Texas.—Ernest O. Thompson.
Oklahoma.—Gov. E. W. Marland.

Also, one State, Michigan, who is at the present time not a member of the compact, answered present by Mr. Henry G. Hunt, representative.

First report read was the committee on bylaws, which was presented by Mr. Hiram M. Dow, New Mexico. The report, after a general discussion and amendment offered by Mr. Homer Hoch, Kansas, which was accepted, was unanimously adopted.

Second report read was the committee on coordination of police powers of member States, which was presented by Col. Ernest O. Thompson, Texas. The report was unanimously adopted.

Third report read was the committee on conservation. Mr. Homer Hoch, Kansas, reported that the committee had not completed their work, but that progress was being made and the committee was granted further time.

Mr. H. C. Bretschneider, Colorado, member of the committee on resolutions, introduced a resolution with reference to the Bureau of Mines' figures as follows:

"RESOLUTIONS

"Whereas, the Interstate Oil Compact Commission has appointed a committee on consumption to study the methods used in determining the current consumption and demand for petroleum products, and,

"Whereas this committee will report periodically to the Interstate Oil Compact Commission its findings; Now, therefore, be it

"*Resolved by the Interstate Oil Compact Commission*, That pending such report it be recommended to the regulatory bodies of all of the oil producing States that they receive in evidence the periodical findings of the United States Bureau of Mines with reference to consumption and supply and demand, and 'that said evidence be given proper and high consideration by said regulatory bodies.' "

After quite a lengthy discussion (which is reported in full in the transcript of said meeting) the resolution was unanimously adopted.

Mr. William Bell, Illinois, member of the committee on resolutions, introduced a resolution with reference to the present oil-producing States, who are not members of the commission, being given permission to attend the commission's meetings as observers, and at the invitation of the chairman be accorded the privileges of the floor to express their views. The resolution was unanimously adopted.

Senator Tom Anglin, assistant representative of Oklahoma, gave a list of figures showing the relation of compacting and noncompacting States' production with regard to the figures set by the Bureau of Mines since the approval of the compact by Congress in August, 1935.

Col. Ernest O. Thompson, Texas, moved that the commission give an expression of gratitude and thanks to the State of Michigan for its interest in the commission, and sending its representative, Mr. Henry G. Hunt to the meetings. The motion was unanimously adopted.

Mr. Hiram M. Dow, New Mexico, moved that at this time the two vice chairmen be designated first vice chairman and second vice chairman, and that the representative from Kansas be the first vice chairman. The motion was unanimously adopted.

A motion was made by Mr. Hiram M. Dow, New Mexico, that the secretary furnish each member of the commission a list of the different members' addresses, their phone numbers, both business and residence, which was unanimously adopted. List was furnished each member before meeting adjourned.

Mr. Homer Hoch, Kansas, called attention to the fact that the bylaws previously adopted provided that the committees be appointed by the chairman, subject to confirmation by the commission, and the other resolution had been adopted providing for the appointment of certain committees and asked that the committees be appointed so that they could be confirmed, the following committees were later appointed;:

Conservation committee.—Kansas, chairman, New Mexico, Oklahoma.

Coordination committee.—Texas, chairman, Kansas, Oklahoma, Colorado, New Mexico, Illinois.

Consumption committee.—New Mexico, chairman, Texas, Colorado,.

Import and export committee.—Illinois, chairman, Texas, Colorado.

Mr. Hiram M. Dow, New Mexico, moved that the commission at this time formally approve the appointment of the members of all committees designated so that the record would be complete. Resolution was unanimously adopted.

Mr. Henry G. Hunt, Michigan, addressed the commission, as representative from Michigan. (Complete speech in transcript has been furnished each member of the commission.)

Mr. Wm. R. Boyd, Jr., executive vice president of the American Petroleum Institute, addressed the commission. (Complete speech in transcript has been furnished each member of the commission.)

Gen. Roy F. Hoffman of Oklahoma City addressed the commission. (Complete speech in transcript has been furnished each member of the commission.)

Mr. William H. McFadden, Ponca City, Okla., addressed the commission. (Complete speech in transcript has been furnished each member of the commission.)

A motion was made by Mr. Hiram M. Dow, New Mexico, that when we adjourn that we adjourn to meet in Oklahoma City, 10 o'clock a. m., Friday, December 13, 1935. Seconded by Mr. H. C. Bretschneider, Colorado, and passed unanimously.

Motion to adjourn was made by Col. Ernest O. Thompson, Texas, an seconded by Mr. Homer Hoch, Kansas. Passed unanimously.

E. W. MARLAND, *Chairman.*

Attest:

ART L. WALKER, *Secretary.*

MINUTES OF THE MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE CAPITOL BUILDING, OKLAHOMA CITY, OKLA., DECEMBER 13, 1935

Meeting called to order by Gov. E. W. Marland, Oklahoma, chairman.

Minutes of the previous meeting held October 11, 1935, read and approved.

On roll call the following States answered present:

Colorado.—Present, Hon. H. C. Bretschneider.

Illinois.—Present, Hon. William Bell.

Kansas.—Present, Hon. Homer Hoch. Also present, Hon. Marvin Lee, Kansas Corporation Commission technical staff.

New Mexico.—Present, Hon. Hiram M. Dow. Also present, Dr. E. H. Wells, State Geologist, and Hon. Frank Vesely, State Land Commissioner.

Texas.—Present. Col. Ernest O. Thompson. Also present, Hon. Jack Blalock and Hon. Elwood Fouts.

Oklahoma.—Present, Gov. E. W. Marland. Also present, Senator Tom Anglin, Assistant Representative; Gov. W. J. Holloway, Legal Adviser for the Oklahoma Oil Compact Commission; and Hon. C. C. Brown, Technical Adviser for the Oklahoma Oil Compact Commission.

Hon. Neal H. Anderson was present representing the State of California as an observer, and Hon. F. E. Frye, petroleum engineer of the State Conservation Department of Michigan; and Hon. Henry G. Hunt, secretary of the Oil and Gas Association of Michigan, were present representing the State of Michigan as observers.

Governor Marland made a brief statement about the reports he had received of the American Petroleum Institute meeting in Los Angeles. Complete statement in transcript.

The chairman then called for a report about the conservation committee. Hon. Homer Hoch, chairman of the committee, stated that he had no final report to make at this time but made a statement as to the work that was in progress and stated that the committee would be ready to make a further report at the next meeting.

The next report was from Col. Ernest O. Thompson, chairman of the Coordination committee, who filled a preliminary report of the committee on coordination of police powers covering some 184 pages, which was filed and made a part of the permanent records of the Compact Commission.

Senator Tom Anglin reported on the meeting of the American Petroleum Institute in Los Angeles.

Governor Marland had Hon. Homer Hoch read the resolution adopted at the annual meeting of the Independent Petroleum Association of America at Dallas, Tex., November 5, 1935. The resolution is set out in full in the transcript.

Hon. Hiram M. Dow, chairman of the committee on consumption, presented a report which he stated was only preliminary and that they were expecting to make a visit to Washington to contact the Bureau of Mines to obtain information which would be contained in their future reports.

Hon. William Bell, chairman of the committee on imports and exports, presented his report which is set out in full in transcript.

Hon. Neal H. Anderson of California representing Gov. Frank F. Merriam as an observer, then addressed the commission.

Hon. Henry G. Hunt, secretary of the Oil and Gas Association of Michigan, one of the representatives of Gov. Frank D. Fitzgerald of Michigan, attending as an observer, addressed the commission.

Hon. F. E. Frye, petroleum engineer of the State Conservation Department of Michigan, also a representative of Gov. Frank D. Fitzgerald of Michigan, attending as an observer, then addressed the commission.

The chairman called on Hon. H. C. Bretschneider, member of the commission from Colorado, who addressed the commission.

The chairman called on Hon. Harold B. Fell, executive vice president of the Independent Petroleum Association of America, who addressed the commission.

Hon. Jack Blalock, Houston, Tex., was called on by the chairman, who addressed the commission.

The chairman called on Hon. Elwood Fouts, Houston, Tex., who addressed the commission.

Hon. Frank Vesely, State land commissioner of New Mexico, was called on, who made a brief statement.

Hon. Marvin Lee of the technical staff of the Kansas Corporation Commission, addressed the commission in response to invitation from the chairman.

Hon. Homer Hoch then moved that the meeting adjourn until the next regular meeting which is Friday, March 13, 1936, to be held in Oklahoma City, Okla. Seconded by Col. Ernest O. Thompson. Passed.

(Addresses delivered by all the above-mentioned parties are set out in full in the transcript.)

E. W. Marland, *Chairman.*

Attest:

Art L. Walker, *Secretary.*

Minutes of the Meeting of the Interstate Oil Compact Commission Held in the Capitol Building, Oklahoma City, Okla., March 13, 1936

Meeting called to order by Gov. E. W. Marland, Oklahoma, chairman.

Minutes of the previous meeting held December 13, 1935, read and approved.

On roll call the following States, members of the Interstate Oil Compact Commission, answered present.

Colorado.—Absent.

Illinois.—Hon. William Bell.

Kansas.—Hon. Homer Hoch. Also present, Hon. Marvin Lee, Kansas Corporation Commission technical staff.

New Mexico.—Hon. E. H. Wells, representing Hon. Hiram M. Dow.

Texas.—Col. Ernest O. Thompson. Also present, Hon. Jack Blalock and Hon. Elwood Fouts.

Oklahoma.—Gov. E. W. Marland. Also present Senator Tom Anglin, assistant representative; Gov. W. J. Holloway, legal adviser for the Oklahoma Division of Oil Compact Commission; and Hon C. C. Brown, technical adviser for the Oklahoma Division of Oil Compact Commission.

Other States represented, which are not at this time members of the compact, are as follows:

California.—Hon. J. R. Pemberton.

Indiana.—Hon. V. E. Bolyard.

Michigan.—Hon. Henry G. Hunt.

Ohio.—Hon. Wendell Stephens.

Wyoming.—Hon. Wilfrid O'Leary.

Letters from Hon. H. C. Bretschneider of Colorado, explaining why he was unable to attend the meeting, and from other States, invited to attend, were read by the secretary.

Governor Marland delivered an interesting address setting out in full the activities of the Interstate Oil Compact Commission since its organization and had the compact read.

The chairman called for a report of the conservation committee. Hon. Homer Hoch, chairman, stated that at this time the subcommittee, composed of Hon. Marvin Lee of Kansas, Dr. E. H. Wells of New Mexico, and Hon. C. C. Brown of Oklahoma, was doing fine work toward the completion of the study of the conservation measures of the various oil-producing States, and that a preliminary report had been compiled. Mr. Hoch read the report.

The chairman called for a report of the committee on coordination. Col. Ernest O. Thompson, chairman, reported that the committee had been working on a compilation of the aggregate potential production of both oil and gas of each member State to the compact and that as soon as a few minor details could be worked out copies of the report would be mailed to member States.

The chairman called for a report of the committee on consumption. Dr. E. H. Wells, chairman, reported that they had had several conferences with the Bureau of Mines concerning the survey to be made checking the quantity and quality of oil in storage in the United States.

Senator Tom Anglin made a brief statement regarding the visit of the committee on conservation with the Bureau of Mines and the cooperation received from the Bureau.

Hon. William Bell asked for further time on the report to be made by the committee on imports and exports, which was granted.

Gov. W. J. Holloway addressed the commission giving the details of the matter of appropriation for the survey of crude-oil stocks for the Bureau of Mines.

The chairman then called on the various representatives from the States not members to the compact at this time, who addressed the commission. They were: Hon. J. R. Pemberton of California, Hon. V. E. Bolyard of Indiana, Hon. Henry G. Hunt, of Michigan, Hon. Wendell Stephens of Ohio, and Hon. Wilfrid O'Leary of Wyoming.

A personal telephone call from Governor Noe of Louisiana to the chairman was announced to the commission.

Hon. W. G. Skelly, president, international exposition, wired an invitation to the visitors and members of the commission to attend the forthcoming petroleum exposition in Tulsa, the same being read.

Col. Ernest O. Thompson of Texas extended an invitation to all present to come to the Texas Centennial Exposition, and extended an invitation for the next meeting of the compact commission to be held in Texas.

Hon. Fred F. Florence, president, Texas Centennial Central Exposition, wired an invitation to the commission to hold their next meeting in Dallas and visit the centennial exposition.

Col. Ernest O. Thompson of Texas made the motion that when the commission adjourned that it adjourn to meet in Dallas, Friday, July 31, 1936. Seconded by Hon. Homer Hoch of Kansas. Carried unanimously.

The chairman then called on various members of the oil industry as follows: Hon. W. R. Boyd, Jr., executive vice president, American Petroleum Institute; Hon. Charles Roeser, president, Independent Petroleum Association of America; Hon. Harold B. Fell, executive vice president, Independent Petroleum Association of America; Hon. Wirt Franklin of Oklahoma City, and Hon. Jack Blalock of Houston, Tex., who addressed the commission and explained in detail the reasons for holding the next meeting of the compact commission in Dallas during the Texas Centennial Exposition.

Hon. Homer Hoch moved that we adjourn. Seconded by Dr. E. H. Wells. Motion carried.

(Addresses delivered by above-named men recorded in full in transcript of proceedings.)

E. W. Marland, *Chairman.*

Attest:

Art L. Walker, *Secretary.*

MINUTES OF THE MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE BAKER HOTEL, DALLAS, TEX., JULY 31, 1936

In the absence of Gov. E. W. Marland of the State of Oklahoma, chairman of the Interstate Oil Compact Commission, the meeting was called to order by Senator Tom Anglin, his representative.

On roll call the following States, members of the Interstate Oil Compact Commission, answered present.

Colorado.—Not present.

Illinois.—Hon. William Bell.

Kansas.—Hon. Homer Hoch. Also present, Hon. Marvin Lee, Kansas Corporation Commission technical staff.

New Mexico.—Dr. E. H. Wells, representing Hon. Hiram M. Dow. Also present Hon. Frank Vesely, State land commissioner.

Texas.—Col. Ernest O. Thompson. Also present, Hon. Elwood Fouts and Hon. Jack Blalock.

Oklahoma.—Senator Tom Anglin, representing Gov. E. W. Marland. Also present Gov. W. J. Holloway, legal adviser to the Oklahoma division of the Interstate Oil Compact Commission; Hon. C. C. Brown, technical adviser to the Oklahoma division of the Interstate Oil Compact Commission.

Other States represented, not members of the Interstate Oil Compact Commission, as follows:

California.—Hon. J. R. Pemberton.

Indiana.—Hon. Ralph E. Esarey.

Kentucky.—Hon. Earl D. Wallace.

Michigan.—Hon. F. R. Frye; Hon. Henry G. Hunt.

Ohio.—Hon. Wendell Stephens.

Pennsylvania.—Hon. Walter A. Jones.

Letters from Hon. H. C. Bretschneider of Colorado and Hon. Hiram M. Dow of New Mexico, members of the compact commission, and others invited to attend the meeting were read expressing regret at their inability to be present.

Minutes of the previous meeting held March 13, 1936, read and approved.

Col. Ernest O. Thompson extended a hearty welcome from the State of Texas and greetings from their Governor, who was unable to attend, to members of the commission and others attending the meeting. Col. Thompson joined with Hon. Fred F. Florence, president, Texas Centennial Central Exposition, Dallas, and Hon. Charles Roeser, president, Independent Petroleum Association of America, Fort Worth, in extending to all those present an invitation to visit the Centennial Expositions at both Dallas and Fort Worth, which invitations were accepted and a good time had by all.

Senator Tom Anglin, representing Governor Marland, replied in behalf of the compact commission and joined with Colonel Thompson in extending to all the visiting States a hearty welcome to the compact meeting. A brief statement reviewing the work of the commission was given.

The chairman called for a report of the conservation committee. Hon. Homer Hoch, chairman, presented to the commission a report prepared by the subcommittee composed of Hon. Marvin Lee, of Kansas, chairman, Dr. E. H. Wells, of New Mexico, and Hon. C. C. Brown, of Oklahoma. This report was one of the most important ones so far prepared by any committee and had to do with codifying and indexing the conservation laws and regulations of the various States. It being stated that it is the intention of the subcommittee to prepare this index for each of the oil- and gas-producing States, but a large part of the work remains to be completed and some financial arrangements will have to be made regarding the same. A complete report of the committee is included in the transcript of proceedings.

The chairman called for a report of the coordinating committee. Colonel Thompson, chairman, reported continued work by this committee and reviewed briefly the work up to that time. Colonel Thompson read to the commission a report of the tanker and barge shipments of crude oil collected and distributed by the Department of the Interior and asked that the same be adopted by the commission. Motion carried. Colonel Thompson introduced a second resolution with reference to the extension of the life of the compact, calling for the naming of a committee of three. This resolution was also adopted by the commission.

The chairman appointed the following as members of a committee to study and make recommendations as to the proper procedure to be followed in extending the life of the compact:

Committee.—Col. Ernest O. Thompson, Texas; Hon. Homer Hoch, Kansas; Hon. William Bell, Illinois.

The chairman called for a report of the consumption committee. Dr. E. H. Wells, chairman, reported that no definite action had been taken since the last regular meeting and had no report to make and asked for further time. He stated that the study by the Bureau of Mines of the crude oil in storage over the United States was progressing nicely and read a letter from John W. Finch, Director of the Bureau of Mines, outlining the main purposes of the survey.

The chairman called for a report of the committee on imports and exports. Hon. William Bell, chairman, asked for further time for their committee report.

The chairman then called on the various representatives from the States not members to the compact at this time, who addressed the commission. They were: Hon. J. R. Pemberton, California; Hon. Ralph E. Esarey, Indiana; Hon. Earl D. Wallace, Kentucky; Hon. Henry G. Hunt, Michigan; Hon. F. R. Frye, Michigan; Hon. Wendell Stephens, Ohio; Hon. Walter A. Jones, Pennsylvania.

Visitors to the meeting representing various branches of the oil industry and their associations were introduced by different members of the commission. Included in this list were Hon. W. R. Boyd, Jr., executive vice president of the American Petroleum Institute; Hon. Charles Roeser, president, Hon. Harold B. Fell, executive vice president, and Hon. Russell Brown of the Independent Petroleum Association of America; Hon. Elwood Fouts of Houston, Tex.; Hon. Joe Bridwell, Wichita Falls, Tex.; Hon. Harry Reynolds, mayor of Highland Park, Dallas; General McGee, former Adjutant General of the State of Texas; former Gov. W. J. Holloway of Oklahoma, representing Governor Marland of Oklahoma at the centennial exposition and also legal adviser to the Oklahoma division of the Interstate Oil Compact Commission; Hon. C. C. Brown, technical adviser to the Oklahoma division of the Interstate Oil Compact Commission; and Hon. Earl Foster, attorney for the proration department of the Corporation Commission of the State of Oklahoma.

Hon. Robert Hardwick of Fort Worth, Tex., member of the committee on oil and gas conservation of the American Bar Association, then addressed the commission. He stated that his association was in hearty accord with the work being done by Hon. Marvin Lee's subcommittee and offered the fullest cooperation of their association in this work of codifying and indexing the conservation laws and regulations of the various States.

Hon. W. R. Boyd, Jr., addressed the commission stating that his invitation to the barbecue on his ranch in Freestone County, Tex., was still open and the change of plans was made by the secretary of the commission, who accepted the blame with reservations that the invitation would be accepted at some future date.

Col. Ernest O. Thompson moved that we adjourn to meet in Oklahoma City, Okla., State Capitol Building, 10 a. m., Friday, October 2, 1936.

Hon. Homer Hoch seconded the motion. Motion carried and meeting was adjourned.

(Reports and statements by all the above-named men are recorded in full in the transcript of proceedings.)

E. W. MARLAND, *Chairman.*

Attest:

ART L. WALKER, *Secretary.*

MINUTES OF THE MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE STATE CAPITOL BUILDING, OKLAHOMA CITY, OKLAHOMA, OCTOBER, 2, 1936

Meeting called to order by Gov. E. W. Marland, Oklahoma, chairman.

On roll call the following States, members of the Interstate Oil Compact Commission, answered present:

Illinois.—Hon. William Bell.

Kansas.—Hon. Homer Hoch. Also present, Hon. Marvin Lee of the Kansas Corporation Commission technical staff.

New Mexico.—Hon. Frank Vesely, State land commissioner, representing Hon. Hiram M. Dow.

Texas.—Col. Ernest O. Thompson. Also present, Hon. Elwood Fouts.

Oklahoma.—Gov. E. W. Marland. Also Senator Tom Anglin, assistant representative; Gov. W. J. Holloway, legal adviser; and Hon. C. C. Brown, technical adviser, Oklahoma Division of the Interstate Oil Compact Commission.

Colorado.—Not present.

Other States represented, not members of the Interstate Oil Compact, are as follows:

California.—Hon. J. R. Pemberton.

Kentucky.—Hon. Earl D. Wallace.

Wyoming.—Hon. Pierre LaFleiche.

Letters from Hon. H. C. Bretschneider, of Colorado, member of the Compact Commission, and Messrs. Henry G. Hunt and F. R. Frye, of Michigan, and others have been received expresssing regret at their inability to be present. A wire from Hon. Walter A. Jones of Pennsylvania was read to the meeting.

The Interstate Oil Compact was read by the Secretary to the meeting.

Minutes of the previous meeting held July 31, 1936, in Dallas, Tex., were read read and approved.

The chairman called for a report of the committee on conservation. Hon. Homer Hoch, chairman of the committee, reported further work on the codification of the conservation laws and regulations of the various oil producing States, but no additional report was ready at this time.

The chairman called for a report of the committee on coordination. Col. Ernest O. Thompson, chairman of the committee, reported that their committee had been in close touch with the committee on conservation and reported progress in the committee work.

Col. Ernest O. Thompson presented the report of the committee on the extension of the compact along with the coordination committee report and submitted a resolution to be passed by each State's legislature extending the life of the compact in each particular State.

Hon. Frank Vesely, acting chairman of the committee on consumption, reported that no written report was ready at this time and asked for further time.

Hon. William Bell, chairman of the committee on imports and exports, asked for further time for their committee report.

Gov. E. W. Marland, chairman, announced the annual election of officers for the ensuing year was then in order. Col. Ernest O. Thompson, representative for the State of Texas, was elected chairman; Hon. Hiram M. Dow, representative for the State of New Mexico, was elected first vice chairman; and Hon. William Bell, representative for the State of Illinois, was elected second vice chairman. Col. Ernest O. Thompson, chairman-elect, announced the reappointment of Art L. Walker as secretary of the commission.

Colonel Thompson suggested that we hold the next meeting of the compact commission on one of the days of the meeting of the Independent Petroleum Association of America to be held in Oklahoma City, Monday and Tuesday, November 30 and December 1, 1936. The meeting date of the next meeting was named as Tuesday, December 1, 10 a. m., to be held in the State Capitol Building, Oklahoma City, Okla.

Hon. Frank Vesely and Colonel Thompson addressed the commission, reviewing briefly the work of Gov. E. W. Marland as chairman for the recently completed year's work by the commission. Motion was presented and passed for the preparation of a resolution to be written on parchment and presented to Gov. E. W. Marland as a memento of his leadership as the first chairman of the Interstate Oil Compact Commission.

Colonel Thompson made a motion to the effect that one representative of each State be named to meet with him in conference with the Bureau of Mines of the Department of the Interior to be held in Washington, D. C., on the 10th of October, 1936. The chairman suggested that the representative present from each State contact their respective Governors and request that representatives be sent to Washington.

The chairman called on the various representatives from the States not members to the compact at this time, who addressed the commission. They were: Hon. J. R. Pemberton, California; Hon. Earl E. Wallace, Kentucky; Hon. Pierre LaFleiche, Wyoming.

Visitors and official observers to the meeting were then called on, who addressed the commission. They were: Hon. C. C. Brown, Oklahoma Tax Commission, Oklahoma City; Hon. Charles Roeser, president, Independent Petroleum Association of America; Hon. W. R. Boyd, Jr., vice president, American Petroleum Institute; Hon. Wirt Franklin, former president, Independent Petroleum Association of America.

Meeting was adjourned to meet in Oklahoma City, Okla., Tuesday, December 1, 1936.

(Reports of the various committees and statements by all who addressed the commission are recorded in full in the transcript of proceedings.)

Ernest O. Thompson, *Chairman.*

Attest:

Art L. Walker, *Secretary.*

Minutes of the Meeting of the Interstate Oil Compact Commission Held in the State Capitol Building, Oklahoma City, Okla., December 1, 1936

The meeting was called to order by Col. Ernest O. Thompson, chairman.

The following representatives of the member States were present:

Colorado.—Hon. Warwick M. Downing.

Illinois.—Hon. William Bell.

Kansas.—Hon. Homer Hoch. Also Hon. Marvin Lee of the Kansas Corporation Commission's technical staff.

New Mexico.—Hon. Hiram M. Dow. Also Dr. E. H. Wells.

Oklahoma.—Senator Tom Anglin, assistant representative; Hon. W. J. Holloway, legal adviser, and Hon. C. C. Brown, technical adviser, Oklahoma Division of the Interstate Oil Compact Commission.

Texas.—Col. Ernest O. Thompson. Also Hon. Elwood Fouts.

Representatives of nonmember States present at the meeting were:

California.—Hon. J. R. Pemberton.

Indiana.—Hon. V. E. Bolyard.

Kentucky.—Hon. Earl D. Wallace.

Michigan.—Hon. Henry G. Hunt and Dr. Virgil R. D. Kirkham.

Ohio.—Hon. Wendell Stephens.

Pennsylvania.—Hon. Walter A. Jones.

Hon. Hiram M. Dow introduced members of his delegation in attendance, to wit: Dr. E. H. Wells, of the conservation commission, and Mr. Herman R. Cry, from Roswell.

Hon. Homer Hoch introduced members of his delegation and staff—Mr. Marvin Lee, technical adviser, and Mr. Morgan, director of the Kansas Conservation Division.

Senator Tom Anglin introduced Mr. C. C. Brown, technical adviser to the Compact Commission; Governor W. J. Holloway, attorney for the Compact Commission; and Senator Knox Garvin, chairman of the Oil and Gas Committee of the Oklahoma State Senate.

The minutes of the meeting held October 2, 1936, were read and approved.

The chairman read a letter from Gov. Frank D. Fitzgerald, of Michigan, appointing Dr. Virgil R. D. Kirkham and Henry G. Hunt and F. R. Frye his unofficial observers to represent the State of Michigan. These gentlemen were then introduced to the commission and addressed the meeting.

The chairman then called on the representatives of the compacting States who reported on their States. The following persons addressed the meeting:

Hiram M. Dow, New Mexico; Homer Hoch, Kansas; Warwick M. Downing, Colorado; Wendell Stephens, Ohio; William Bell, Illinois; Tom Anglin, Oklahoma; V. E. Bolyard, Indiana; J. R. Pemberton, California; Earl D. Wallace, Kentucky; Elwood Fouts, Texas; Dr. E. H. Wells, New Mexico; Walter A. Jones, Pennsylvania; Chas. Roeser, president, Independent Petroleum Association of America, Fort Worth, Tex.; Axtel J. Byles, president, American Petroleum Institute, New York City; W. R. Boyd, Jr., executive vice president, American Petroleum Institute, New York City, Russell Brown, Counsel, Independent Petroleum Association of America, Washington, D. C.; Senator Knox Garvin, Oklahoma; Frank Buttram, Oklahoma City; Steve Anderson, Oklahoma City; Marvin Lee, Kansas; and Col. Ernest O. Thompson, Texas.

On motion of Tom Anglin, seconded by William Bell, that the chairman appoint a committee to advise with Governors of oil-producing States and the oil and gas committees of the legislatures of such States, and to draw necessary bills and resolutions for conservation measures, for extending the compact and for noncompacting States. The motion was carried unanimously. The chairman announced that from time to time he would appoint representatives of the compact commission as were convenient and available to the States to do this missionary work.

On motion duly made, seconded, and carried, Oklahoma City was fixed as the meeting place for the next quarterly meeting of the commission to be held on the

12th of March 1937, and Santa Fe, N. Mex., for the summer meeting to be held June 11, 1937.

The meeting then adjourned.

ERNEST O. THOMPSON, *Chairman.*

Attest:

ART L. WALKER, *Secretary.*

(All remarks, motions, resolutions, letters, etc. referred to above are recorded in full in meeting transcript.)

MINUTES OF THE SPECIAL MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE ROOSEVELT HOTEL, NEW ORLEANS, LA., ON MAY 10, 1937

Meeting called to order by Col. Ernest O. Thompson, chairman.

Minutes of the previous meeting held December 1, 1936, read and approved.

On roll call the following States, members of the Interstate Oil Compact Commission, answered present:

Colorado.—Warwick M. Downing.
Kansas.—Ernest E. Blincoe.
New Mexico.—Hiram M. Dow.
Oklahoma.—C. C. Brown.
Texas.—Ernest O. Thompson.
Illinois.—Not present.

Col. Ernest O. Thompson, chairman, then stated the purpose of the meeting which was to renew the compact, which expires the 1st day of September 1937, unless renewed prior to that time. The chairman then called on Mr. Elwood Fouts, of Houston, Tex., who read the extension agreement that was to be signed. Mr. Downing, of Colorado, moved that the extension agreement, which was read by Mr. Fouts, be adopted, and was seconded by Mr. Brown, of Oklahoma. The motion carried unanimously.

Colonel Thompson then announced that he was taking the opportunity of signing first as the representative of Texas, and that it was a proud moment for him, after which all the other members signed as representatives of their respective States. Chairman Thompson then reviewed the work of the compact and the progress that was being made in Washington to have the extension agreement approved by the President and Congress.

Colonel Thompson then called on Mr. Downing, of Colorado; Lieutenant Governor Dow, of New Mexico; Mr. Brown, of Oklahoma; and Mr. Blincoe, of Kansas, to address the commission.

At this point Hon. Richard W. Leche, Governor of Louisiana, arrived at the meeting, having been kind enough to drive from Baton Rouge, their Capital, to attend the meeting. Governor Leche was then introduced to the members of the commission and made a fine talk.

Judge Fouts, of Houston, Tex., Mr. Jack Blalock, of Houston, Tex., Mr. William Rankin, of New Orleans, La., Dr. J. A. Shaw, New Orleans, and Mr. W. H. McFadden, of New Orleans, La., all addressed the meeting and pledged their cooperation in conservation work.

Mr. Brown, of Oklahoma, moved that the meeting then adjourn and that the next session be held in Santa Fe, N. Mex., July 12 and 13, 1937. Motion was seconded by Mr. Downing, of Colorado. Motion carried unanimously.

Meeting adjourned.

ERNEST O. THOMPSON, *Chairman.*

Attest:

ART L. WALKER, *Secretary.*

(The statements and addresses referred to in the minutes are recorded in full in the transcript of the proceedings.)

MINUTES OF THE MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE LA FONDA HOTEL, SANTA FE, N. MEX., JULY 12–13, 1937

Meeting called to order by Col. Ernest O. Thompson, chairman.

Minutes of the special meeting held at the Roosevelt Hotel, New Orleans, La., May 10, 1937, read and approved.

On roll call the following members of the Interstate Oil Compact Commission answered present.

Colorado.—Warwick M. Downing.
Kansas.—Ernest E. Blincoe.
New Mexico.—Gov. Clyde Tingley.
Oklahoma.—Gov. E. W. Marland.
Texas.—Col. Ernest O. Thompson.

Roll call showed representatives from the following States, not yet members of the compact, answering present:

Arkansas.—J. H. Alphin.
Michigan.—Henry G. Hunt.
Pennsylvania.—Walter A. Jones.
Wyoming.—Pierre LaFleiche.

Col. Ernest O. Thompson then stated that we were honored by the presence of two of the Governors of the compacting States—Gov. Clyde Tingley of New Mexico and Gov. E. W. Marland of Oklahoma.

Governor Tingley delivered a welcoming address to the delegates. Governor Marland addressed the meeting thanking them for the warm reception tendered by Santa Fe and New Mexico.

Mr. J. H. Alphin of Arkansas made a short statement to the meeting expressing the regrets of Governor Bailey in being unable to attend the meeting, and extending an invitation to the commission to hold their next meeting at Hot Springs.

Colonel Ernest O. Thompson read a telegram from President Franklin D. Roosevelt, wishing the meeting great success.

Col. Ernest O. Thompson then introduced the Honorable Sam Blanton, who delivered a short address to the members and those present. This was followed by addresses by Lt. Gov. Hiram M. Dow, of New Mexico, Senator Clint Small of Texas, and Senator Tom Anglin of Oklahoma, who introduced the members of the staff of the Oklahoma Oil Compact Commission.

Judge Elwood Fouts, of Houston, read the interstate oil compact in full, which is the custom of the commission at each meeting.

Hon. Ernest E. Blincoe, chairman of the committee on conservation, gave a short report of the subcommittee, composed of Marvin Lee, C. C. Brown, and E. H. Wells.

Col. Ernest O. Thompson stated that the commission had with them the Honorable George W. Holland, Director of the Petroleum Conservation Division of the Bureau of Mines, Hon. A. G. White, chief, Petroleum Economics Division of the Bureau of Mines, Hon. R. A. Cattel, chief engineer, Petroleum and Natural Gas Division of the Bureau of Mines, and Mr. J. W. Horne, of the Bureau of Mines, who would make a preliminary report on the survey which had been made on crude in storage throughout the Nation. All the gentlemen were then introduced to the commission. The report of the Bureau of Mines was quite a lengthy one and is made a part of the transcript of the meeting and is set out in full.

A committee was then appointed to draft a telegram in answer to the telegram received from President Roosevelt.

Col. Ernest O. Thompson addressed the commission briefly giving a short talk on the World Petroleum Congress held in Paris, France.

Time and place of next meeting was left open with instructions for the chairman to designate the date and place, the same to be held some time in the month of October 1937.

The meeting then adjourned.

Ernest O. Thompson, *Chairman.*

Attest:

Art L. Walker, *Secretary.*

(Addresses of all the parties and committee reports referred to in the minutes are recorded in full in the transcript of the meeting.)

Minutes of the Meeting of the Interstate Oil Compact Commission Held in the Rice Hotel, Houston, Tex., October 14, 1937

Meeting called to order by Col. Ernest O. Thompson, chairman.

On roll call the following members of the Interstate Oil Compact Commission answered present:

Colorado.—Hon. E. M. Thomasson, Hon. W. H. McFadden.
Kansas.—Hon. Ernest E. Blincoe.
Illinois.—Hon. William Bell.
New Mexico.—Gov. Hiram M. Dow.
Oklahoma.—Gov. E. W. Marland.

Texas.—Col. Ernest O. Thompson.

The roll call further showed representatives from the following States, not yet members of the compact, in attendance:

Arkansas.—Hon. O. C. Bailey.

California.—J. R. Pemberton.

Louisiana.—Hon. C. A. Morvant.

Pennsylvania.—Hon. Walter A. Jones.

Wyoming.—Hon. Pierre LaFleiche.

The minutes of the meeting of July 12–13, 1937, were read and approved.

Colonel Thompson then introduced the visitors, members of staffs, etc. Among those introduced was Hon. Joseph E. Pogue, of New York City, who made quite a lengthy address to the meeting. There was a general discussion by Colonel Thompson and Mr. C. M. Langford, of the Texas Railroad Commission, explaining charts and conservation measures being used by the Texas Railroad Commission. The following were called upon by the chairman, who addressed the commission: Senator Tom Anglin, Hon. Charles Roeser, Hon. William Bell, Gov. Hiram M. Dow, Hon. Van Welch, Hon. Wirt Franklin, Hon. Ernest E. Blincoe, Judge E. R. Sloan, Hon. Ennis Harris, Hon. E. G. Dahlgren, Hon. Marvin Lee, Hon. E. M. Thomasson, Hon. C. A. Morvant, Hon. Pierre LaFleiche, Hon. C. C. Bailey, Hon. George Hill, Hon. D. E. Buchanan, Hon. Harry Wise, Hon. O. D. Donnell, Hon. Axtel J. Byles, Hon. W. R. Boyd, Jr., Gov. W. J. Holloway, Hon. Jack Blalock, Gov. E. W. Marland, and Hon. Elwood Fouts.

Next on the order of business was the annual election of officers. Col. Ernest O. Thompson of Texas was unanimously reelected chairman for the coming year as were the following officers: Gov. Hiram M. Dow of New Mexico as first vice chairman, Hon. William Bell of Illinois as second vice chairman. The chairman then announced the reappointment of Art L. Walker as secretary for the coming year.

It was voted that the next meeting of the Interstate Oil Compact Commission was to be held in Oklahoma City at a time to be fixed by the chairman and secretary, which was later fixed as 10 a. m., Tuesday, January 18, 1938.

The meeting then adjourned.

ERNEST O. THOMPSON, *Chairman.*

Attest:

ART L. WALKER, *Secretary.*

MINUTES OF THE INTERSTATE OIL COMPACT COMMISSION MEETING HELD IN THE BILTMORE HOTEL, OKLAHOMA CITY, OKLA., JANUARY 18, 1938

Meeting called to order by Col. Ernest O. Thompson, chairman.

On roll call the members of the Interstate Oil Compact Commission answered as follows:

Colorado.—Absent. (Governor Dow of New Mexico explained Colorado's absence as occasioned by its Representative attending a proration hearing in Montana.)

Kansas.—Hon. Ernest E. Blincoe.

Illinois.—Hon. William Bell.

New Mexico.—Gov. Hiram M. Dow.

Oklahoma.—Gov. E. W. Marland.

Texas.—Col. Ernest O. Thompson.

The minutes of the meeting of October 14, 1937 were read and approved.

Upon the invitation of Colonel Thompson, Hon. Walter Jones of Pennsylvania addressed the meeting as an observer from that State and introduced into the record a message from Governor Earle of Pennsylvania.

Hon. D. T. Bolling, representing Governor Chandler of Kentucky, then addressed the meeting expressing the good wishes of Kentucky and its Governor.

Gov. E. W. Marland and Senator Tom Anglin of Oklahoma both made short addresses of welcome. Senator Anglin then introduced the Oklahoma delegation which included C. C. Brown, Oklahoma tax commissioner, Art L. Walker, compact commission secretary, Jack H. Smith, assistant secretary, and W. H. McFadden.

Hon. Ernest E. Blincoe, Kansas member, made an address and introduced his State's delegation, to wit: E. G. Dahlgren, Innis Harris, H. A. Meyer, and Marvin Lee, the last named accepting the invitation of the chairman to comment on the way he found proration in Texas.

Gov. Hiram M. Dow addressed the meeting, following which he introduced the following persons from New Mexico: Hon. Frank Worden, State land commissioner, Hon. A. Andreas, State geologist, Hon. Glenn D. Macy, former State geologist.

Hon. William Bell then addressed the meeting to which Chairman Thompson responded. There followed the introduction of some of the Texas delegation by Colonel Thompson. They were: Capt. E. M. Stanley, Judge Elwood Fouts, Hon. Jack Blalock, Hon. Charles Roeser, Hon. Harold Byrd, Gen. Mark McGee, Judge Ira Butler, Hon. V. E. Cottingham, Hon. H. W. Byram, Hon. W. R. Boyd, Jr., Hon. Spencer Smith, Hon. J. M. Brim, Mr. Wilson and Mr. Ambrose. Thereupon the chairman paid tribute to the press of the Nation—newspapers and journals—and particularly the Saturday Evening Post for an article carried therein on the Interstate Oil Compact Commission.

Hon. Charles Roeser gave a summary of the oil situation, quoting statistical figures and answering questions.

Senator Anglin introduced into the record a tabulation of Bureau of Mines figures relating to production and allowables as applied to the various oil producing States.

Hon. M. L. Haider gave a discussion on the Burbank Field in Osage County, Okla. He was followed by Hon. V. E. Cottingham with a discussion of the Texas oil fields aided with charts and maps.

Other persons introduced were: Hon. Van Welch, Gen. Baird H. Markham, Hon. Russell Brown, Hon. Wirt Franklin, Hon. W. J. Armstrong, Hon. J. S. Bridwell, Judge Earl Foster, Mr. Stalcup, and Mr. Alvard.

After receiving invitations to hold the next meeting of the compact in Harrisburg, Pa., Wichita, Kans., and Tulsa, Okla., a vote of the commission was taken and Wichita, Kans., chosen as the next meeting place, the date thereof to be decided at a later date by the Kansas members.

Closing remarks were made by Hon. William Bell.

The meeting then adjourned.

ERNEST O. THOMPSON, *Chairman.*

Attest:

ART L. WALKER, *Secretary.*

(All addresses, remarks and exhibits referred to above are set out in full in the transcript of said meeting.)

MINUTES OF THE MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE ALLIS HOTEL, WICHITA, KANS., APRIL 29–30, 1938

Meeting called to order by Chairman Ernest O. Thompson.

On roll call the member States responded as follows:

Colorado.—Warwick M. Downing.

Kansas.—Ernest E. Blincoe.

Illinois.—William Bell.

New Mexico.—Hiram M. Dow.

Oklahoma.—Tom Anglin.

Texas.—Col. Ernest O. Thompson.

Observers from other States were:

Kentucky.—Earl D. Wallace and D. T. Bolling.

Louisiana.—W. F. Chisholm and Clarence P. Dunbar.

Senator Anglin introduced the Oklahoma delegation: C. C. Brown, technical adviser, W. J. Holloway, attorney, Art L. Walker, secretary, Earl Foster, attorney for the proration department, State of Oklahoma, and his assistant Jess B. Harper.

The Kansas representative, Ernest E. Blincoe, introduced Dr. Stephenson, dean of the School of Petroleum Engineering of the University of Kansas.

Chairman Thompson introduced Senator Clint Small, Elwood Fouts, V. C. Cottingham, chief petroleum engineer, and Dr. F. B. Plummer, University of Texas, all of Texas.

Charles F. Roeser addressed the meeting on the statistics of the stocks on hand of petroleum and gasoline.

Dr. A. C. White, of the Bureau of Mines, presented the forecast of the United States Bureau of Mines.

Gov. Walter Huxman addressed the meeting.

Dr. Joseph E. Pogue, Dr. E. DeGolyer, and Dr. Alexander Sachs, nationally known economists, addressed the commission on the economic aspects of oil and gas conservation.

Dr. F. B. Plummer addressed the meeting on conservation from a petroleum engineering standpoint.

Dr. Alfred H. Bell, of the Illinois Geological Survey, gave a report on oil exploration, discoveries and development in Illinois and exhibited maps and charts.

Mr. Harold B. Fell, executive vice president of the Independent Petroleum Association of America, read the report of his committee on balance of supply with demand.

Senator Tom Anglin moved and proposed a telegram to the Governor of Louisiana inviting that State to join the interstate oil compact. The motion was duly seconded and carried and the telegram forwarded. On motion of Tom Anglin, duly seconded and carried, a copy of the telegram was delivered to the representative of Governor Chandler of Kentucky inviting that State to pass a resolution to join the compact.

On motion duly made, seconded, and carried, the chairman was authorized and directed to appoint a committee of five as an advisory committee on economies. The chairman announced the appointment of three members of the committee, to wit: Alexander Sachs, chairman, and Joseph E. Pogue and E. D. Golyer, members, and announced he would name the two other members at a later date.

Motion was duly made, seconded, and carried that the chairman appoint a committee to confer with the Bureau of Mines on the question of forecasts of market demand, and to lend assistance in procuring proper appropriations for the Bureau of Mines to do this forecasting work.

The chairman appointed Hiram M. Dow, chairman, and Ernest E. Blincoe and Tom Anglin members.

Hiram M. Dow, William Bell, Ernest E. Blincoe, Tom Anglin, Colonel Thompson, and others discussed the spacing laws of the various States.

On motion duly made, seconded, and carried, Colorado Springs was voted as the next meeting place of the Commission, meeting to be held July 29, 1938.

The meeting then adjourned.

Ernest O. Thompson, *Chairman.*

Attest:

Art L. Walker, *Secretary.*

(Remarks, addresses, etc., referred to above are set out in full in transcript of said meeting.)

Minutes of the Meeting of the Interstate Oil Compact Commission Held in the Broadmoor Hotel, Colorado Springs, Colo., July 29, 1938

Meeting called to order by Col. Ernest O. Thompson, chairman.

Welcome address was delivered by the Honorable George Birdsall, mayor of the city of Colorado Springs, to which Gov. E. M. Marland of Oklahoma responded, concluding with the introduction of the Honorable Leon C. Phillips, Democratic governor-elect of Oklahoma.

Colonel Thompson then read in full a telegram from the Honorable Harold L. Ickes, Secretary of the Interior.

The roll call was answered thus:

Colorado—Warwick M. Downing.
Illinois—C. M. Kneier.
New Mexico—Hiram M. Dow.
Oklahoma—Gov. E. W. Marland.
Texas—Col. Ernest O. Thompson.
Kansas—Ernest E. Blincoe.

Hon. Walter Johnson, of Colorado, then read a telegram from Gov. Teller Ammons, following which addresses were delivered by ex-Governor Shoup of Colorado and the Honorable Max W. Ball, also of Colorado.

The minutes of the previous meeting were read and approved.

Delegations from Oklahoma and Kansas were then introduced to the meeting, followed by the introductions of delegations from noncompacting States.

The Honorable Lon A. Smith, member of the Texas Railroad Commission, addessed the meeting. Chairman Thompson read a message from the Honorable C. V. Terrell, chairman of the Texas Railroad Commission, and then introduced the Texas delegation in attendance.

An announcement of entertainment arrangements was then made by Gen. W. H. McFadden, of Colorado Springs.

Gov. E. W. Marland, of Oklahoma, then moved that a telegram in response to Secretary Ickes' message be drafted. Motion carried unanimously.

Hon. Leon C. Phillips addressed the meeting, pledging his support in continuing the work of the commission.

Addresses were then delivered by the following: Charles F. Roeser, president of the Independent Petroleum Association of America, Fort Worth, Tex., Dr. Joseph E. Pogue, New York City, member of the Economic Advisory Committee.

Upon motion by Governor Marland, the meeting recessed until 2 o'clock.

At the afternoon session Dr. Alexander Sachs, New York City, chairman of the Economic Advisory Committee, delivered a joint paper prepared by him and Dr. Pogue on Internal Problems of Proration in Oil Conservation.

A committee report on the Bureau of Mines' method of ascertaining marked demands was then given by the committee chairman, Gov. Hiram M. Dow, of New Mexico, which report was written into the records of the meeting signed by the chairman and members, Blincoe and Anglin.

A resolution was then introduced by Judge Sloan, of Kansas, member and representative of the compact, that representatives of the several compacting States "serve as a committee to consider plans for recommending the continuance of the compact to the several States and to Congress," which was unanimously carried.

The following delivered addresses: C. M. Kneier, of Illinois; J. R. Pemberton, of California; Wendell Stephens, of Ohio; G. W. Holland, of the Interior Department, Washington, D. C.; A. G. White, of the Bureau of Mines, Washington, D. C., and C. A. Morvant, Louisiana.

Motion of Governor Marland was unanimously carried that the meeting adjourn to meet in Tulsa at a date to be fixed by the Commission chairman. Meeting adjourned.

ERNEST O. THOMPSON, *Chairman.*

Attest:

ART L. WALKER.

(Addresses, remarks, exhibits, etc., referred to in these minutes are recorded in full in transcript of said meeting.)

MINUTES OF THE MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE MAYO HOTEL, TULSA, OKLA., SEPTEMBER 29, 1938

Meeting called to order by Chairman Ernest O. Thompson.

The roll call showed the following compact members and observers present:

Colorado—Warwick M. Downing.
Illinois—William Bell.
Kansas—E. R. Sloan.
New Mexico—E. H. Wells.
Oklahoma—Gov. E. W. Marland.
Texas—Ernest O. Thompson.

OBSERVERS

California—J. R. Pemberton.
Louisiana—C. A. Morvant.
Indiana—Gov. M. Clifford Townsend.
Delaware—Gov. Richard C. McMullen.

Minutes of the meeting held July 29, 1938, were read and approved.

Welcome address was delivered by Chairman Thompson who introduced Gov. James V. Allred, of Texas, and W. Lee O'Daniel, Governor-elect of Texas.

Governor Allred then delivered an address followed by Governor-elect O'Daniel.

Colonel Thompson introduced C. A. Morvant, observer from Louisiana, and J. R. Pemberton, observer from California. Mr. Pemberton then addressed the meeting.

Gov. E. W. Marland introduced Leon C. Phillips, Governor-elect from Oklahoma, who made an address.

William Bell, Illinois representative, addressed the meeting and read into the record a statement by Hon. Henry Horner, Governor of Illinois, and then introduced Dr. Alfred H. Bell, geologist, who discussed the oil development in Illinois. William Bell followed Dr. Bell by reading a statement on refineries, which was entered in the record.

Warwick M. Downing of Colorado, Dr. E. H. Wells of New Mexico, Judge E. R. Sloan of Kansas, Governor Allred of Texas, Governor Marland of Oklahoma, Governor Townsend of Indiana, and Governor McMullen of Delaware, all addressed the meeting; Governor McMullen talking on the "consumers viewpoint."

A statement by Charles F. Roeser, President of the Independent Petroleum Association of America was then entered in the record.

A committee report was then given by Judge E. R. Sloan, chairman.

Colonel Thompson gave a report on the Texas oil fields.

The Commission then proceeded to the election of officers. The following officers were elected:

Ernest O. Thompson, chairman.

Hiram M. Dow, first vice chairman.

William Bell, second vice chairman.

Art L. Walker, secretary.

On motion duly made, seconded, and carried, the time and place of the next meeting was left to the discretion of the chairman.

The meeting then adjourned.

ERNEST O. THOMPSON, *Chairman.*

Attest:

ART L. WALKER, *Secretary.*

(All remarks, addresses, exhibits, etc., referred to in the above minutes are recorded in full in transcript of said meeting.

MINUTES OF THE INTERSTATE OIL COMPACT COMMISSION MEETING HELD IN THE BLACKSTONE HOTEL, FORT WORTH, TEX., DECEMBER 15, 1938

Meeting called to order by Chairman Ernest O. Thompson.

The roll call showed the following members present:

Colorado.—James Duce and L. M. Hughes.

Illinois.—C. N. Kneier.

Kansas.—E. R. Sloan.

New Mexico.—Hiram M. Dow.

Oklahoma.—Governor E. W. Marland and Tom Anglin.

Texas.—Col. Ernest O. Thompson.

Nonmembers present were:

California.—Neal Anderson.

Michigan.—J. C. Graves.

Minutes of the meeting held September 29, 1938, were read and approved.

Opening statements were made by Colonel Thompson who introduced Dr. A. G. White, chief of the Petroleum Economics Division, Bureau of Mines, Washington, D. C., who addressed the meeting.

Mr. Fred Van Covern then delivered an address followed by Dr. Charles Patton who gave a discussion on distillates.

Hiram M. Dow was then asked by the chairman to take the chair and preside over the meeting.

Governor Dow then introduced Senator Tom Anglin of Oklahoma, who presented those attending the meeting from Oklahoma.

Governor-elect Leon C. Phillips, of Oklahoma, then addressed the meeting.

L. M. Hughes and James Duce, representing Colorado, were introduced to the commission.

C. N. Kneier of Illinois delivered an address followed by Judge E. R. Sloan of Kansas.

E. B. Shawver, representing Governor-elect Payne Ratner of Kansas, spoke to the meeting.

Neal Anderson, representing the State of Califorina, accepted the invitation of the chair and made an address and extended an invitation to the commission to hold its next meeting in San Francisco.

J. C. Graves of Michigan was then introduced and spoke to the meeting. He was followed by Governor-elect John E. Miles and Lieutenant Governor-elect James M. Murray of New Mexico, both of whom addressed the meeting.

Colonel Thompson then addressed the commission and called upon Judge E. R. Sloan of Kansas, chairman of the committee appointed to deliver a report on the continuation of the interstate oil compact, to make such report to the commission. Judge Sloan then made the report recommending that the compact be extended for 2 years without change. The report was approved and adopted.

Governor Marland was then called upon by Colonel Thompson, who had resumed the chair, and delivered an address. He was followed by Senator Anglin.

Governor Dow moved that the next meeting place be designated by the chairman, Ernest O. Thompson, which motion was adopted. The meeting then adjourned subject to the call of the chairman.

ERNEST O. THOMPSON, *Chairman.*

Attest:

ART L. WALKER, *Secretary.*

(All addresses, exhibits, etc., referred to in these minutes are set out in full in transcript of said meeting.)

MINUTES OF THE MEETING OF THE INTERSTATE OIL COMPACT COMMISSION, HELD IN THE STEPHEN F. AUSTIN HOTEL, AUSTIN, TEX., MARCH 16, 1939

Meeting called to order by Chairman Ernest O. Thompson.

Roll call showed the following present:

COMPACT MEMBERS

Colorado.—Warwick M. Downing.
Illinois.—Jack Coyle.
Kansas.—Andrew F. Schoeppel.
New Mexico.—Hiram M. Dow.
Oklahoma.—Chas. L. Orr.
Texas.—Ernest O. Thompson.

NONMEMBERS

Arkansas.—O. C. Bailey.
California.—Ed. Pauley.
Louisiana.—Mr. Dunbar.
Pennsylvania.—Parker L. Melvin.

The minutes of the meeting held December 15, 1938, were read and approved.

Russell Brown read and filed the report of the committee on supply and demand of the Independent Petroleum Association of America.

Governor W. Lee O'Daniel then appeared and addressed the meeting. Axtell J. Byles, president of the American Petroleum Institute, spoke on the responsibility of the States and the compact commission in conservation.

Dr. A. G. White, of the Bureau of Mines, discussed the stock situation in oil and gasoline and the Bureau forecast of market demand.

The representatives of the member States made reports for their States. The States of Colorado, New Mexico, and Oklahoma reported that laws had been enacted authorizing the extension of their participation in the compact for another 2 years.

Ed Pauley, of California; O. C. Bailey, of Arkansas; Dr. A. H. Bell, of Illinois; F. C. Lauinger, editor of Oil and Gas Journal; Roy Dudley, editor of the Oil Weekly; and William R. Shuh, president of the National Association of Petroleum Retailers, addressed the meeting.

Motion made, duly seconded, and carried, that the chairman appoint a committee on minimum standards of sound conservation and equitable proration.

Motion made, duly seconded, and carried, that the next meeting be held at Santa Fe, N. Mex., and that the chairman fix the date.

The meeting then adjourned.

ERNEST O. THOMPSON, *Chairman.*

Attest:

ART L. WALKER, *Secretary.*

(All addresses, remarks, motions, etc., referred to in these minutes, are set out in full in transcript of said meeting.)

MINUTES OF THE MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE CAPITOL BUILDING, SANTA FE, N. MEX., JULY 19–20, 1939

Meeting called to order by Chairman Ernest O. Thompson.

Compact members answering the roll call were:

Colorado.—Warwick M. Downing.
Illinois.—Alfred H. Bell.
Kansas.—Andrew F. Schoeppel.
Michigan.—P. J. Hoffmaster.

New Mexico.—Gov. John E. Miles.
Oklahoma.—Gov. Leon C. Phillips, W. J. Holloway, Tom Anglin.
Texas.—Ernest O. Thompson.

NONMEMBER

Arizona.—Wm. Alberts.

Minutes of meeting of March 16, 1939, were read and approved.

Gov. John E. Miles and Lt. Gov. James M. Murray, of New Mexico, welcomed the commission to Santa Fe, N. Mex. Gov. Leon C. Phillips, of Oklahoma, responded.

Hiram M. Dow read and filed a paper on New Mexico's conservation policies. P. J. Hoffmaster discussed the Michigan law and its enforcement. Andrew F. Schoeppel discussed the enforcement of the Kansas conservation statutes.

William Alberts, State land commissioner of Arizona, addressed the meeting on the oil development in Arizona.

Dr. E. DeGolyer read and filed a report by the advisory committee on economics, which committee was appointed by the chairman of the commission at a previous meeting and is composed of Alexander Sachs, E. DeGolyer, and Joseph E. Pogue. The report was upon principles and standards for crude oil production.

Dr. A. G. White of the Bureau of Mines, discussed the present supply and demand situation and the Bureau of Mines' market demand forecasts.

Charles F. Roeser, president of the Independent Petroleum Association of America, read and filed a supplemental report of his committee on balance of supply with demand.

Hon. W. J. Holloway gave a report to the commission of the execution of the extension of the compact by the States for another 2 years and the proceedings in Congress for the ratification of the extension agreement. He presented to the commission a resolution expressing the appreciation and thanks of the commission to the President of the United States, Secretary of the Interior, and the Members of the United States Senate and House of Representatives for the approval and ratification for another 2-year period of the Interstate Oil Compact Commission.

Senator Clint C. Small of Texas addressed the meeting on the subject of conservation from a legislator's standpoint.

Harold B. Fell, a member of the committee on minimum standards, read and filed a report and recommendation of the committee on minimum standards of sound conservation and equitable proration.

Dr. A. H. Bell of Illinois gave a report of exploration, development, and production of Illinois and exhibited maps and charts. Hon. E. B. Swanson of the conservation division of the Department of the Interior, addressed the meeting on the importance of conservation of our petroleum resources.

Judge I. W. Keys of Corpus Christi, Tex., read and filed a report on the history of the conservation laws of the State of Texas.

An open discussion was then had by members of the industry.

The commission, by appropriate resolution, expressed its thanks and appreciation to the Governor, Lieutenant Governor and representatives from New Mexico for the courtesies extended to the commission.

On motion duly made, seconded, and carried, the time and place of the next meeting was left to the discretion of the chairman.

The meeting then adjourned.

Ernest O. Thompson, *Chairman.*

Attest:

T. C. Knoop, Jr., *Assistant Secretary.*

(All remarks, resolutions, etc. in full in transcript.)

Minutes of the Special Meeting of the Interstate Oil Compact Commission Held in the Blue Room of the Governor's Office in the State Capitol of Oklahoma at Oklahoma City, Okla., August 15, 1939

The commission was called to order by Col. Ernest O. Thompson, chairman.

The following member States were represented by the following representatives:

Colorado.—E. H. McFadden, Colorado Springs, Colo.
Illinois.—Guy E. McGaughey, Lawrenceville, Ill.
Kansas.—Andrew F. Schoeppel, Topeka, Kans.
Michigan.—P. J. Hoffmaster, Lansing, Mich.
New Mexico.—Lt. Gov. James M. Murray, Hobbs, N. Mex.

Oklahoma.—Gov. Leon C. Phillips, Oklahoma City, Okla.
Texas.—Col. Ernest O. Thompson, Austin, Tex.

Other States and their representatives in attendance were:

Arkansas.—O. C. Bailey, Little Rock, Ark.
Louisiana.—John E. Farrell, Fort Worth, Tex.

The following persons also attended the meeting: A. Andreas, Santa Fe, N. Mex.; H. N. McClure, Alma, Mich.; Ralph J. Pryor, Wichita, Kans.; Harold Medill, Topeka, Kans.; T. A. Morgan, Wichita, Kans.; Jack Blalock, Houston, Tex.; Elwood Routs, Houston, Tex.; Gen. Mac Q. Williamson, Oklahoma City, Okla.; Charles L. Orr, Holdenville, Okla.; F. H. Dudley, Oklahoma City, Okla.; W. J. Holloway, Oklahoma City, Okla.; Earl Foster, Oklahoma City, Okla.; W. J. Armstrong, Oklahoma City, Okla.; Ray O. Weems, Oklahoma City, Okla.; A. S. J. Shaw, Oklahoma City, Okla.; T. C. Knoop, Jr., Oklahoma City. Okla.

The chairman announced that the meeting was called for the purpose of considering the action of the Texas Railroad Commission in ordering a 15-day shut-down of oil wells in Texas.

A general discussion was had of this shut-down order as an effective conservation measure, its necessity, its legality, its enforceability as a waste prevention measure, and whether or not it was within the province of the compact commission to make recommendations in the matter. After this general discussion the following resolution was proposed and unanimously adopted:

"RESOLUTION

"The sovereign producing States are capable of handling their own oil conservation problems. We firmly believe that they will promptly and properly control the production of oil within their own States. We feel that it will be done with certainty and in a manner that will get results.

"Each State will handle its own particular problem in its own particular way, subject only to the laws of that particular sovereign State.

"We reiterate that State sovereignty should not and will not permit encroachment upon its exclusive police power.

"Article VI of the Interstate Oil Compact provides in part: '* * * The duty of which said commission shall be to make inquiry and ascertain from time to time such methods, practices, circumstances and conditions as may be disclosed for bringing about conservation and the prevention of physical waste of oil and gas, and at such intervals as said commission deems beneficial it shall report its findings and recommendations to the several States for adoption or rejection.

"'The commission shall have power to recommend the coordination of the exercise of the police powers of the several States within their several jurisdictions to promote the maximum ultimate recovery from the petroleum reserves of the said States. And to recommend measures for the maximum ultimate recovery of oil and gas.'

"Under the authority granted us by the legislatures of our States, and under the consent of the Congress, we have exchanged our experiences, and have thoroughly discussed ways and means of conserving oil and gas in our own respective States; and each State will take such action as it sees fit, and each State will make its own announcements."

The meeting then adjourned.

Ernest O. Thompson, *Chairman.*

Attest:

T. C. Knoop, Jr., *Assistant Secretary.*

Minutes of the Special Meeting of the Interstate Oil Compact Commission Held in the Stephen F. Austin Hotel, Austin, Tex., August 28, 1939.

The commission was invited by the Railroad Commission of the State of Texas to attend its State-wide proration hearing at Austin, Tex., August 28, 1939.

The following representatives appeared at the hearings of the railroad commission as observers:

Illinois.—Guy E. McGaughey.
Kansas.—Andrew F. Schoeppel.
Michigan.—F. R. Frye.
New Mexico.—Hiram M. Dow.
Oklahoma.—W. J. Holloway.
Texas.—Colonel Ernest O. Thompson.

NONMEMBER

Louisiana.—John Farrell.

The commission members were guests of the Railroad Commissioners of Texas at a luncheon at the Stephen F. Austin Hotel, Austin, Tex., and at a dinner that evening. At the dinner an informal discussion was had of the evidence developed in the hearings before the railroad commission and representatives gave reports from their States. No official business was transacted nor were any resolutions made or adopted.

The meeting then adjourned.

ERNEST O. THOMPSON, *Chairman.*

Attest:

T. C. KNOOP, Jr., *Assistant Secretary.*

MINUTES OF THE SPECIAL MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE BLACKSTONE HOTEL, FORT WORTH, TEX., SEPTEMBER 15, 1939

The meeting was called to order by Chairman Ernest O. Thompson.

Roll being called the following States appeared represented:

COMPACT MEMBERS

Colorado.—W. H. McFadden.
Kansas.—Andrew F. Schoeppel.
New Mexico.—Hiram M. Dow.
Oklahoma.—W. J. Holloway.
Texas.—Colonel Ernest O. Thompson.

NONMEMBER STATES

California—Kenneth I. Fulton.
Louisiana—John Farrell.

The following persons attended the meeting:

Harold Medill, Kansas; Ralph Pryor, Kansas; Theo. A. Morgan, Kansas; Frank Worden, New Mexico; A. Andreas, New Mexico; J. O. Seth, New Mexico; Chas. L. Orr, Oklahoma; T. C. Knoop, Jr., Oklahoma; Ray O. Weems, Oklahoma; Earl Foster, Oklahoma; W. J. Armstrong, Oklahoma; Robert S. Kerr, Oklahoma; Tom Anglin, Oklahoma; Lon Smith, Texas; Jerry Sadler, Texas; Elwood Fouts, Texas; Jack Blalock, Texas.

The chairman announced that Art L. Walker, secretary of the commission, had resigned and that his resignation had been accepted. Thereupon, Charles L. Orr was appointed secretary by the chairman and the appointment was confirmed by the commission.

After reports by representatives of the various States and discussions by members of the regulatory bodies of the various States, it was agreed that the Bureau of Mines' forecasts were reasonably accurate and the best available guide for the various States to follow in the production of oil and that the commission recommended to the States the following of these forcasts. A motion was duly made, seconded and carried that the compact commission recommend to the oil-producing States that they adopt and follow the Bureau of Mines' estimates and forecasts of market demand and that each State keep its allowable production within these estimates.

The meeting then adjourned.

ERNEST O. THOMPSON, *Chairman.*

Attest:

CHAS. L. ORR, *Secretary.*

MINUTES OF THE REGULAR QUARTERLY MEETING OF THE INTERSTATE OIL COMPACT COMMISSION HELD IN THE ALLIS HOTEL, WICHITA, KANS., JANUARY 22, 1940

Meeting called to order by Chairman Ernest O. Thompson.

Roll being called by the secretary the following member States were represented by—

Colorado—L. M. Hughes.
Kansas—Andrew F. Schoeppel.
Michigan—F. R. Frye.
New Mexico—Hiram M. Dow.
Oklahoma—Governor Leon C. Phillips.
Texas—Colonel Ernest O. Thompson.
Illinois—Absent.

The following nonmember State was represented by—

Arkansas—O. C. Bailey.

Minutes of preceding regular meeting held in Santa Fe, N. Mex., July 29, 1939, the minutes of special meetings held in Oklahoma City, Okla., August 15, 1939; Austin, Tex., August 28, 1939, and Fort Worth, Tex., September 15, 1939, were read and approved.

Opening remarks were made by Chairman Thompson who then introduced Hon. Payne Ratner, Governor of Kansas, who addressed the meeting. Hon. Leon C. Phillips, Governor of Oklahoma, responded.

The following representatives and observers from the several States present then addressed the commission: Hiram M. Dow, of New Mexico; Jerry Sadler, of Texas; L. M. Hughes, of Colorado; F. R. Frye, of Michigan; and O. C. Bailey, of Arkansas.

Dr. A. G. White of the Bureau of Mines, then delivered an address on the functions of that department, the statistical position of the industry and the operation of the Bureau of Mines' forecasts.

Chairman Thompson then requested Vice Chairman Dow to take the chair and immediately moved the election of a new chairman, nominating Governor Leon C. Phillips as chairman of the compact commission. Motion was seconded by Mr. L. M. Hughes, of Colorado, and vote being had, the nominee was unanimously elected. Hiram Dow relinquished the chair to Governor Phillips and placed in nomination for Vice Chairman Mr. Andrew F. Schoeppel, which nomination was duly seconded by Mr. Hughes. Vote being had Mr. Schoeppel was unanimously elected vice chairman of the commission.

After remarks of acceptance by both newly elected officials, W. J. Holloway addressed the commission and concluded with a motion that the commission express its appreciation for the service rendered by the two retiring officers. Motion was duly seconded and carried unanimously.

Mr. H. B. Fell, executive vice president of the Independent Petroleum Association of America, read and filed a report of that association's committe on balance of supply with demand.

An open discussion followed, after which Mr. Jack Blalock, Houston, Tex., and Mr. Frank Buttram, president of the Independent Petroleum Association of America, Oklahoma City, addressed the meeting.

The chairman then appointed Colonel Ernest O. Thompson, Hiram M. Dow, and Andrew F. Schoeppel as a committee to appear before the subcommittee of the House Interestate and Foreign Commerce Committee to present the case of the Interstate Oil Compact Commission to that committee.

Motion was duly made, seconded, and unanimously carried that the time and place of the next meeting of the commission be fixed by the chairman.

Upon motion made, seconded, and carried the meeting adjourned.

LEON C. PHILLIPS, *Chairman.*

Attest:

CHAS. L. ORR, *Secretary.*

(Remarks, addresses, reports, and exhibits referred to in these minutes are recorded in full in the transcript of said meeting.)

CERTIFICATE

I hereby certify that the above and foregoing 49 sheets contain a true and correct copy of the minutes of the meetings of the Interstate Oil Compact Commission held from September 12, 1935, to January 22, 1940, inclusive.

CHAS. L. ORR, *Secretary.*

STATEMENT OF JACK BLALOCK OF BLALOCK, BLALOCK, LOHMAN AND BLALOCK, HOUSTON AND MARSHALL, TEX.

Mr. BLALOCK. Mr. Chairman and gentlemen of the committee, my name is Jack Blalock. I am a lawyer, member of the firm of Blalock, Blalock, Lohman and Blalock, Houston and Marshall, Tex.

I am appearing before the committee, in order to orally present, on behalf of the Interstate Oil Compact Commission, the sincere opinion of the commission that the pending legislation, H. R. 7372, is unconstitutional.

I have prepared a legal brief, copies of which have been submitted to the committee which, in my opinion, shows that the present bill, House bill 7372, is unconstitutional. It is the purpose of this presentation to discuss with this committee the authorities, the decisions of the United States Supreme Court, which in my opinion, demonstrate beyond doubt that the Federal Government has no authority and no power to control the production of crude petroleum within the boundaries of the several sovereign States; that this bill is purely a production control bill, I do not believe that there is any doubt or any conflict of opinion.

An examination of the bill itself demonstrates beyond question that the purpose of the bill, made clear by its very terms, is to regulate and control production of all of the oil wells in all of the oil fields of America.

In the title of the bill, it is referred to as a conservation act—not the regulation of interstate commerce but the conservation of oil, within its natural reservoirs; in its method of production and after it reaches the surface of the earth, and is placed in storage.

Nowhere in the bill, with the exception of section 19, is commerce dealt with. Section 19 is the Connally Act, reenacted after its provisions have been broadened to include the orders and the edicts of the Federal Commissioner to be issued under the power sought to be conferred upon him in the previous sections of the bill.

Of course section 19 is separable from the other sections of the bill.

The bill itself in all its provisions deals with production. That being true, the test then arises as to whether the Federal Government may control and regulate the production of crude petroleum on private lands within the boundaries of the several States.

The real author of the bill, Mr. Ickes, seeks to justify its constitutionality upon two grounds: First, that it is necessary and desirable for the Federal Government to control and regulate the production of crude petroleum in order to prepare and provide for the national defense.

The second reason assigned, and upon which the constitutionality is predicated, is that the Federal Government has this power to control production under its undoubted right to regulate interstate commerce.

In the brief and in this argument we will seek to show first, that the Federal Government has no power to regulate the production of oil within the boundaries of the sovereign States, except, of course, on Indian and Federal lands, under an asserted necessity of providing for the national defense, and second, that the Federal Government ha no authority to control the production of oil under the guise of regulating interstate and foreign commerce.

In the concluding parts of the brief, we then show that the exclusive power to regulate the production of oil lies within the State itself, under the reasonable exercise of its police power.

We also show that if, in the opinion of Congress, it is necessary to provide for the national defense, with reserves of crude petroleum, that there is a specific way set forth in the Constitution, a specific manner whereby the Government can so provide.

In the very beginning, I wish to call attention to the fact that a long and unbroken line of decisions by the Supreme Court hold that a mere declaration of a purpose by Congress adds nothing to the constitutionality of the proposed law. Congress either has the constitutional right to pass a law or it does not. The mere fact that Congress makes a finding and a declaration, unless that declaration comes within the specific grant of power to the Federal Government in the Constitution, adds nothing to the constitutionality of an act. That rule was laid down as early as *McCullough* v. *Maryland* by Chief Justice Marshall when he said:

> Should Congress, in the execution of its powers, adopt measures which are prohibited by the Constitution, or should Congress, under the pretext of executing its powers, pass laws for the accomplishment of objects not entrusted to the government, it should become the painful duty of this tribunal, should a case requiring such a decision come before it, to say that such an act was not the law of the land.

In *Bailey* v. *Drexel Furniture Company* (259 U. S. 20, 66 L. Ed., 817), Chief Justice Taft reiterated that rule when he said:

> It is the high duty and function of this Court in cases regularly brought to its bar to decline to recognize or enforce seeming laws of Congress, dealing with subjects not entrusted to Congress, but left or committed by the Supreme law of the land to the control of the States. We cannot avoid the duty even though it requires us to refuse to give effect to legislation designed to promote the highest good. The good sought in unconstitutional legislation is an insidious feature because it leads citizens and legislators of good purpose to promote it without thought of the serious breach it will make in the ark of our covenant, or the harm which will come from breaking down recognized standards. In the maintenance of local self-government, on the one hand, and the national power, on the other, our country has been able to endure and prosper for near a century and a half.

That rule is followed without exception in cases and opinions handed down by the United States Supreme Court. As late as *Carter* v. *Carter Coal Company* (298 U. S. 238, 80 L. Ed. 1160), Mr. Justice Sutherland said:

> Certain recitals contained in the act plainly suggest that its makers were of opinion that its constitutionality could be sustained under some general Federal power, thought to exist, apart from the specific grants of the Constitution. The fallacy of that view will be apparent when we recall fundamental principles which, although hitherto often expressed in varying forms of words, will bear repetition whenever their accuracy seems to be challenged.

Now, gentlemen, in view of the language of the courts above quoted, it would appear appropriate at this point to make further restatement of fundamental constitutional principles as contained in various opinions of the United States Supreme Court.

Of course we are all familiar with the fact that when the Constitution was adopted, the States, fearful of the concentration of too much authority in a central government, were slow to ratify it and soon required the adoption of certain amendments which are known as the Bill of Rights.

Article IX reads as follows:

> The enumeration in the Constitution of certain rights, shall not be construed to deny or disparage others retained by the people.

Article X:

> The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.

Those fundamental rules have often been reiterated by the Court. They are quoted, commented upon—never broadened—in a long series of cases among which are to be found *Martin* v. *Hunter's Lessee* (1 Wheat. 304, 4 L. Ed. 97); *Hammer* v. *Dagenhart* (247 U. S. 251, 62 L. Ed. 1101); *Railroad Retirement Board* v. *Alton R. R. Co.*

In *Schechter* v. *United States* (295 U. S. 495, 79 L. Ed. 1570), Chief Justice Hughes restates this fundamental principle, as follows:

> First. Two preliminary points are stressed by the Government with respect to the appropriate approach to the important questions presented. We are told that the provision of the statute authorizing the adoption of codes must be viewed in the light of the grave national crisis with which Congress was confronted. Undoubtedly, the conditions to which power is addressed are always to be considered when the exercise of power is challenged. Extraordinary conditions may call for extraordinary remedies. But the argument necessarily stops short of an attempt to justify action which lies outside the sphere of constitutional authority. Extraordinary conditions do not create or enlarge constitutional power. The Constitution established a National Government with powers deemed to be adequate, as they have proved to be both in war and peace, but these powers of the National Government are limited by the constitutional grants. Those who act under these grants are not at liberty to transcend the imposed limits because they believe that more or different power is necessary. Such assertions of extra-constitutional authority were anticipated and precluded by the explicit terms of the tenth amendment. "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people."

That fundamental American doctrine is found in an opinion by Mr. Justice Sutherland in *Carter* v. *Carter Coal Co.*

Now, gentlemen of the committee, keeping before us these constitutional principles, let us examine this bill, H. R. 7372, in the light of those fundamental authoritative pronouncements.

House bill 7372 cannot be sustained under the national-defense theory.

Section 8 (1) of article I of the Federal Constitution provides as follows:

> The Congress shall have Power to Lay and collect Taxes, Duties, Imposts and Excises, to pay the debts and provide for the common Defense and general Welfare of the United States; but all Duties, Imposes, and Excises shall be uniform throughout the United States.

Gentlemen of the committee, only in the above-quoted section is there found any grant of power to Congress to legislate for the national defense. Does that provision say anything about controlling the production of a commodity which may be necessary or desirable for the national defense? On the contrary, it specifically provides that the manner in which the Federal Government shall provide for the national defense is under the power to lay and collect taxes, duties, imposts, and excises.

Mr. COLE. Could I interrupt you at that point?

Mr. BLALOCK. Yes, sir.

Mr. COLE. You state that only in the above-quoted section is there found any grant of power of Congress to legislate for the national defense. You ignore entirely, do you not, the powers in the same article of the Constitution giving Congress the power to declare war?

Mr. BLALOCK. You refer, of course, to 12 and 13 of section 8.

Mr. COLE. Raise and support armies and provide and maintain a navy.

Mr. BLALOCK. No, sir; I do not ignore it. I treat it on page 45 of this brief. That is 12 and 13 of section 8, the clauses which grant Congress the power to support armies and maintain a navy.

That is a part of this same section 8—maintain a navy; raise an army. But how shall they do it? Under the specific grant of power in (1) of section 8, by doing what? "Lay and collect taxes, duties, imposts, and excises."

Your power to provide for the national defense is limited only by the ability of the people of the United States to pay taxes and the willingness of Congress to appropriate money for that purpose.

But where in this Constitution do you find any provision to provide for the national defense by going into the boundaries of a sovereign State and controlling the production of crude petroleum, or gas, or coal, or iron ore, or cotton, or wheat, or cows, or pigs? All of these things are necessary to maintain an efficient army and navy.

I say to you, sirs, that it is not to be found in the provisions of that document. On the contrary, such power is excluded by the tenth amendment, which says that you shall not do anything for which you have not been granted specific power or a power that rises by necessary implication.

Mr. PEARSON. Mr. Blalock, may I interrupt you again?

Mr. BLALOCK. Yes, sir.

Mr. PEARSON. I understand you to construe subdivision (1) of article I, section 8, to mean that Congress can only provide for the common defense and general welfare by the levying of taxes?

Mr. BLALOCK. Yes, sir.

Mr. PEARSON. Is not that a cumulative power? As I read the section, as I understand it, it has been construed that Congress shall have power to lay and collect taxes, duties, imposts, and excises. to pay the debts and provide for the common defense and general welfare of the United States.

As I understand you, you take that as a continuing power and Congress is limited in the effort to provide for the common defense and general welfare to the laying and collecting of taxes?

Mr. BLALOCK. Yes; I think if the Congressman will permit me, that I can give you two quotations that undoubtedly can be relied upon as a proper construction of that provision.

Let us examine what Madison had to say in the Federalist, No. XLI, page 135:

> Had no other enumeration or definition of the powers of the Congress been found in the Constitution than the general expressions just cited the author of the objection might have had some color to it; though it would have been difficult to find a reason for so awkward a form of describing an authority to legislate in all possible cases. A power to destroy the freedom of the press, the trial by jury, or even to regulate the course of descents, or the forms of conveyances, must be very singularly expressed by the terms "to raise money for the general welfare." But what color can the objection have, when a specification of the objects alluded to by these general terms immediately follows, and is not even separated by a longer pause than a semicolon? If the different parts of the same instrument ought to be so expounded as to give meaning to every part which will bear it, shall one part of the same sentence be excluded altogether from a share in the meaning; and shall the more doubtful and indefinite terms be retained in their full extent, and the clear and precise expressions be denied any signification whatsoever? For what purpose could the enumeration of particular powers be inserted, if these and all others were meant to be included in the preceding general

power? Nothing is more natural nor common than first to use a general phrase, and then to explain and qualify it by a recital of particulars. But the idea of an enumeration of particulars which neither explain nor qualify the general meaning, and can have no other effect than to confound and mislead, is an absurdity, which as we are reduced to the dilemma of charging either on the authors of the objection or on the authors of the Constitution, we must take the liberty of supposing, had not its origin with the latter.

Now, Judge Story gave a classic exposition of his opinion as to the meaning of that section, in *United States* v. *Boyer* (85 Fed. 425), and I am going to take the time of the committee, if you will permit, to read it, because it is right on the point of whether Congress has a right to provide for national defense by controlling the production of a commodity within the boundaries of a State.

I made the statement that in that provision, and in that one alone, you found your authority. Now, having examined the minds of the men who were familiar with the circumstances under which the provision was written, let us next examine the decisions of the court from which there has been no departure, even in recent years and months, and see what the court says. Then, if it will not stand the test, I say that we are justified in making the assertion that Congress has no power to control production of oil for the purpose of providing for the national defense.

Judge Story used the following language:

Before proceeding to consider the nature and extent of the power conferred by this clause, and the reasons on which it is founded, it seems necessary to settle the grammatical construction of the clause, and to ascertain its true reading. Do the words "to lay and collect taxes, duties, imposts, and excises" constitute a distinct, substantial power; and the words "to pay the debts and provide for the common defense and general welfare of the United States" constitute another distinct and substantial power? Or are the latter words connected with the former, so as to constitute a qualification upon them?

I think that is directly in answer to the question that the Congressman asked.

This has been a topic of political controversy, and has furnished abundant materials for popular declamation and alarm. If the former be the true interpretation, then it is obvious that, under color of the generality of the words "and provide for the common defense and general welfare," the Government of the United States is, in reality, a Government of general and unlimited powers, notwithstanding the subsequent enumeration of specific powers. If the latter be the true construction, then the power of taxation only is given by the clause, and it is limited to objects of a national character, "to pay the debts and provide for the common defense and the general welfare." The former opinion has been maintained by some minds of great ingenuity and liberality of views. The latter has been the generally received sense of the Nation, and seems supported by reasoning at once solid and impregnable. The reading, therefore, which will be maintained in these commentaries, is that which makes the latter words a qualification of the former; and this will be best illustrated by supplying the words which are necessarily to be understood in this interpretation. They will then stand thus: "The Congress shall have power to lay and collect taxes, duties, imposts, and excises, in order to pay the debts, and to provide for the common defense and general welfare of the United States"; that is, for the purpose of paying the public debts, and providing for the common defense and general welfare of the United States. In this sense, Congress has not an unlimited power of taxation; but it is limited to specific objects—the payment of the public debts, and providing for the common defense and general welfare. A tax, therefore, laid by Congress for neither of these objections, would be unconstitutional, as an excess of its legislative authority.

Now, that construction is followed in *United States* v. *Butler* (297 U. S. 1, 80 L. Ed. 477, supra (1935)), the *Agricultural Adjustment Act case.*

Mr. Cole. Mr. Blalock, may I interrupt you for a moment at that point?

Mr. Blalock. Yes, sir.

Mr. Cole. Is it your position that Congress has not the power to enact any legislation it sees fit, which is reasonably necessary to guarantee adequate national defense?

Mr. Blalock. You mean, anything that it sees fit?

Mr. Cole. Any legislation that Congress deems necessary to assure adequate national defense of this country.

Mr. Blalock. Yes, sir; that is my position. I think your power to provide for the national defense is to be found in the quoted provision of the Constitution, and I think it is an all-sufficient power, because if you have the willingness to appropriate money and the people have the ability to pay; if you have the willingness to lay taxes, and the people have the ability to pay them, then you can get all of the oil reserves that you want. You can buy them, just like you buy shoes and guns for the Army; you can condemn oil-bearing land, if Congress is willing to make proper provision, and provide the money for just compensation under the right of eminent domain.

Mr. Cole. Who is to determine; whose judgment is to prevail, is my thought; whose judgment is to be used as to what Congress can do to provide money for the defense of this Nation, if Congress sees fit to condemn property, and provide the funds, you concede our right to do that?

Mr. Blalock. Yes, sir.

My position is this, Mr. Chairman: You asked who was to make the decision. The Members of Congress are to make the decision. They do it under the powers of the same document which gave them their right to represent the people. You are sitting here in Congress today by virtue of a specific grant in the Constitution of the United States of America. Having been created by that document, you are bound by its other provisions, and you can do nothing under our constitutional system of government which the States do not see fit to delegate the power to you to do.

Mr. Cole. I made a statement recently, that as to the choice of methods, and the power of Congress to accomplish a legitimate end, the Supreme Court of the United States in *United States* v. *Fisher*, as early as 1805 said:

> It may be said with respect to each that it was not needed because the end might be obtained by the means; Congress must possess the choice of means and must be empowered to use any means which are in fact conducive to the exercise of the power granted by the Constitution.

Mr. Blalock. Will you read that last sentence again about "The power granted by the Constitution."

Mr. Cole (reading):

> Congress possesses the choice of means and must be empowered to use any means which are in fact conducive to the exercise of the power granted by the Constitution.

And then goes back to the very article which you quote, the power of Congress to declare war, to raise and support armies, to provide and maintain a navy.

I am wondering if it does not seem to you that the power to wage war includes also the power to prepare for it and to make sure that necessary materials will be available to the armed forces and to the industries of the country upon which the armed forces are dependent in the event of war.

Mr. BLALOCK. In answer to that, Mr. Chairman, I will say to you that you not only have the power to provide for the means of waging war, if that contingency arises; you have the duty to do so, and the framers of the Constitution realized that, and specifically provided the means for you to do it, and they said further in the Bill of Rights, you cannot exercise means other than those which we confer upon you. It is not Congress having the choice to do anything it wishes because it is to serve a desirable end. Suppose that you come to the conclusion in Congress that it was desirable to abolish all State governments in order to more effectively wage a war? Do you think that this Congress, created by the States, has the power to abolish those States in order to more efficiently wage war?

Mr. COLE. Well, the power that I am quoting, of course, is given to us by the States.

Mr. BLALOCK. Yes sir; and that power——

Mr. COLE. I assume they mean if in the defense of the Nation, such as necessary, then Congress should exercise it.

Mr. BLALOCK. But they did not say it.

Mr. COLE. Well, I am not sure they did not.

Mr. BLALOCK. Well, Mr. Justice Story said positively that they did not. The United States Supreme Court asserted and Madison in the Federalist asserted that they did not mean any such thing when they wrote section 8, (1) of article 1.

There is no decision that I can find, by the United States Supreme Court, which says that that clause in the Constitution means anything different than that said by Mr. Justice Story, and I will later discuss the new decisions of the court. I say that they are distinguishable from this case at bar. I think that some of the framers of this legislation have taken undue and unwarranted comfort from the words of the Supreme Court that were never intended to mean what some people evidently seem to think they mean.

Mr. CROSSER. Mr. Chairman, may I ask a question?

Mr. COLE. Yes, Mr. Crosser.

Mr. CROSSER. You say that the Congress has a right to lay and collect taxes for the purpose of conducting war and for the general welfare, and so on?

Mr. BLALOCK. Yes, sir.

Mr. CROSSER. Do I understand that you mean by that Congress can pass a law taxing the value of the oil lands throughout the United States?

Mr. BLALOCK. Now then, you come to the question of private property rights under other provisions of the Constitution. Of course you can only lay those taxes which you are permitted to lay. I do not mean that you can go out and lay any taxes you see fit. You are limited as to that and the purpose for which you use them.

Mr. CROSSER. I am speaking specifically upon the value of the oil lands; may they be taxed by the Congress of the United States?

Mr. BLALOCK. No, sir.

Mr. CROSSER. Then you will have to modify your statement a little bit, will you not?

Mr. BLALOCK. No, sir. I said that you were limited in providing for national defense only by your willingness to lay taxes, which you are permitted to lay, under the Constitution, and the ability of the people to pay them.

Mr. WOLVERTON. What was that last statement?

Mr. BLALOCK. The ability of the people to pay them; an ability which is a rapidly diminishing national resource, an irreplaceable resource, that Congress might do well to prevent the waste of and take steps to conserve.

Now, gentlemen, I think that under the authorities cited, that it has been demonstrated that Congress does not have a right, under the Constitution of the United States, to control the production of oil within the boundaries of the several sovereign States for the purpose of providing for national defense.

We turn next to a consideration of the question which has been often argued before this committee, yes, before your full committee; before the Committee on Ways and Means, and the Senate Finance Committee, and the Senate Mines and Mining Committee, from time to time during the past 6 years, with reference to whether Congress can control the production of oil within the boundaries of a sovereign State under the right, admitted right, exclusive right, which Congress possesses to regulate interstate and foreign commerce.

We take the position that your power with reference to interstate and foreign commerce is to be found in section 8 of article I of the Federal Constitution which reads as follows:

> The Congress shall have power to regulate commerce with foreign nations, and among the several States, and with the Indian tribes.

This quoted clause contains the sole grant of power to Congress to legislate concerning commerce. Any congressional legislation with reference to commerce, therefore, must be tested and measured by this clause.

Now, what of H. R. 7372? That is a bill which regulates production. Is production commerce? In Texas, oil in place is real estate. It is land. It is a part of the fee. I mention this now, although I discuss it later on in the brief. Can land be commerce? It is obvious that it cannot.

Mr. PEARSON. Do you have a severance statute in Texas?

Mr. BLALOCK. Yes, sir.

Mr. PEARSON. And oil is taxed?

Mr. BLALOCK. After it has been separated from real estate, and becomes personal property.

Mr. PEARSON. Well, it is treated as personal property in the State, is it not?

Mr. BLALOCK. Sir?

Mr. PEARSON. It is treated as personal property?

Mr. BLALOCK. No, it is a part of the fee until it is separated from the realty. This bill will regulate it down in the reservoir before it is ever separated from the realty. It is a bill regulating the production of gas that is in solution in the oil; it is regulating the movement of oil itself before the well is ever drilled; it tells you where you can drill a well; how many you can drill; what kind of pipe you can put in; it tells you how big the hole shall be. It deals with oil in place under the ground, actual real property, land.

Mr. PEARSON. You concede that the States have a right to regulate production?

Mr. Blalock. Yes, sir. I think that that has been definitely established, and the States have that right only under the reasonable exercise of the police power of the States.

The Federal Government has no police power, except in an area, which I believe is 10 miles square, the District of Columbia.

The regulation is an exercise of the police power. The production of oil is not commerce Now, if it is not, the Federal Government has no right to regulate its production under its right to regulate interstate commerce. If it is interstate commerce, then it cannot be intrastate commerce and if the Federal Government has the power to regulate the production of oil, because production is interstate commerce, then the States have no power to regulate the production of oil, because it would be a burden on interstate commerce, the regulation of which is delegated solely and exclusively to the Federal Government.

Cooperation between the Federal and State Governments is one of the things that is provided for in this bill. Now, it is either interstate commerce or it is not. If it is not interstate commerce, Congress has no right to regulate it. If it is interstate commerce, the States have no right to regulate it, because it would be placing a burden on interstate commerce by a State.

The test is, Is production commerce? The word "commerce" nowhere appears in this bill except over in the declaration of policy and in section 19, the separable provision, with reference to the Connally Act.

Where do you find those tests of whether or not a thing is commerce; where do you find the words "seller," "buyer," "price," "carry," "transportation," "exchange," "trade," "traffic," "movement"? There is no combination of words in this bill outside of the penal provisions, the separable clause, section 19, that has to do with commerce. It deals directly with production, and, remember, gentlemen, if you can control the production of crude petroleum within the boundaries of the sovereign States under the guise of regulating interstate commerce, you can control the production of every other commodity that must move later on in commerce; every manufactured article; every grown article; every commodity eventually finding its way into commerce.

The mere fact that it subsequently or immediately moves into commerce does not make the production of the product commerce, because as the Supreme Court has repeatedly held, yes, even in the case of oil, production is not commerce and commerce does not start until production ceases.

Now, let us examine some of the authorities and see whether or not that is correct. Let us consider briefly certain State laws which have been passed upon by the United States Supreme Court. Let us consider the *Veazie case*. The citations of all of these cases are found in this brief and I will not attempt to give them here in the record.

In the *Veazie case*, the Supreme Court had under consideration the question of whether or not a law of the State of Maine, granting the exclusive navigation of the upper Penobscot River, was in conflict with the commerce section of the Constitution. The Court held that the State statute was valid, as the rights granted were essentially local in their nature and extent. In considering the question involved, the Court uses the following language:

It is a long quotation, so I will quote just part of it.

> * * * Nor can it be properly concluded, that, because the products of domestic enterprise in agriculture or manufactures, or in the arts, may ultimately become the subjects of foreign commerce, that the control of the means or the encouragements by which enterprise is fostered and protected, is legitimately within the import of the phrase "foreign commerce."

Then we next consider *Coe* v. *Town of Errol* (116 U. S. 517, 29 L. Ed. 715 (1885)).

The Supreme Court had under consideration the question of whether the assessment of a local tax by the town of Errol, N. H., upon logs cut in New Hampshire, designed for final shipment to Maine, was unconstitutional as being in violation of the commerce clause of the United States Constitution. The court sustained the tax and in considering the distinction between intrastate and interstate commerce used the following language (p. 719):

> Certainly, as long as these products are on the lands which produce them, they are part of the general property of the State. And so we think they continue to be until they have entered upon their final journey for leaving the State and going into another State.

To the same effect is *Kidd* v. *Pearson, supra*, 128 U. S. 1, 32 L. Ed. 346 (1888), and quoting in part from that case where they requote Chief Justice Marshall:

> that it is a matter of public history that the object of vesting in Congress the power to regulate commerce with foreign nations and among the several States was to insure uniformity of regulation against conflicting and discriminating State legislation.

And, quoting further:

> The demands of such a supervision would require, not uniform legislation generally applicable throughout the United States, but a swarm of statutes only locally applicable and utterly inconsistent.

In the *Crescent Cotton Oil Co. case* (*Crescent Cotton Oil Co.* v. *State of Mississippi*, 257 U. S. 129, 66 L. Ed. 166 (1921); in the *Heisler* v. *Thomas Colliery case*, 260 U. S. 245, 67 L. Ed. 237 (1922), the Supreme Court had under consideration the validity of a tax on each ton of anthracite coal mined, washed or screened or otherwise prepared for the market. Those opposing the tax objected that Pennsylvania had a virtual monopoly on the anthracite coal, and, therefore, the tax constituted an interference with commerce prohibited by the United States Constitution. The Court, through Mr. Justice McKenna, in repudiating this contention, used the following language:

> We may, therefore, disregard the adventitious considerations referred to and their confusion, and, by doing so, we can estimate the contention made. It is that the products of a State that have, or are destined to have, a market in other States, are subjects of interstate commerce, though they have not moved from the place of their production or preparation.
>
> The reach and consequences of the contention repel its acceptance. If the possibility, or indeed, certainty, of exportation of a product or article from a State, determines it to be in interstate commerce before the commencement of its movement from the State, it would seem to follow that it is in such commerce from the instant of its growth or production; and in the case of coals, as they lie in the ground. The result would be curious. It would nationalize all industries; it would nationalize and withdraw from State jurisdiction and deliver to Federal commercial control the fruits of Californian and the South, the wheat of the West and its meats, the cotton of the South, the shoes of Massachusetts, and the woolen industries of other States at the very inception of their production or growth; that is, the fruits unpicked, the cotton and wheat ungathered, hides and flesh of cattle yet "on the hoof," wool yet unshorn, and coal yet unmined, because they

are, in varying percentages, destined for and surely to be exported to States other than those of their production.

To the same effect is the rule in *Oliver Iron Mining Company* v. *Lord* (262 U. S. 172, L. Ed. 929 (1922)); the *Utah Power & Light Co.* v. *Pfost* (52 F. (2d) 226; affirmed on appeal, 286 U. S. 165, 76 L. Ed. 1038 (1931)), involving the right of the State to tax electricity generated in the State but transmitted to interstate lines for use in other States. Both the circuit court and the Supreme Court of the United States sustained the tax and held that the "process of generation" was not commerce.

That case is easily distinguishable from the *Consolidated Edison case*, which I will later discuss.

Now, let us consider another one. In the *Champlin Refining Company case, Champlin Refining Co.* v. *Corporation Commission* (286 U. S. 210, 76 L. Ed. 1062 (1931)), the court had under consideration the validity of the proration laws of the State of Oklahoma. The Champlin Co. was engaged in a general oil business. It was sought to enjoin the Oklahoma Corporation Commission (and others) from enforcing certain provisions of the proration statute and regulations thereunder on the ground that they were repugnant to the Commerce clause of the United States Constitution. The court, speaking through Mr. Justice Butler, said on this point (p. 1078):

> Plaintiff contends that the act and proration orders operate to burden interstate commerce in crude oil and its products in violation of the commerce clause. It is clear that the regulations prescribed and authorized by the act and the proration established by the commission apply only to production and not to sales or transportation of crude oil or its products. Such production is essentialy a mining operation and therefore is not a part of interstate commerce even though the product obtained is intended to be and in fact is immediately shipped in such commerce. * * * No violation of the commerce clause is shown.

Gentlemen, what can be clearer; what could be more directly in point with the case here under consideration.

There, is a pronouncement that production is not commerce. And, not being commerce, it cannot be interstate and foreign commerce, and not being interstate and foreign commerce, under the clause of the Constitution quoted, it is not a matter for proper regulation by the Federal Government.

In *Chassaniol* v. *City of Greenwood* (291 U. S. 584, 78 L. Ed. 1004 (1933)), the Supreme Court upheld a license tax imposed by the city of Greenwood, Miss., upon every person engaged in the business of buying or selling cotton, holding that the same did not contravene the commerce clause of the United States Constitution. The opinion was by Mr. Justice Brandeis (p. 1006).

To the same effect is the decision in *Detroit International Bridge Co.* v. *Corporation Tax Appeal Board* (294 U. S. 83, 79 L. Ed. 777 (1934)); and the *Milk Control Board of Pennsylvania* v. *Eisenberg Farm Products* (306 U. S. 346, 83 L. Ed. 752 (1938)). Now, let us see what they had to say in that one.

The Supreme Court, speaking through Mr. Justice Roberts, held that a Pennsylvania statute requiring licenses for milk dealers and fixing a minimum price to be paid producers was not in conflict with the commerce clause. The Court says:

> The respondent maintains a receiving station in Pennsylvania where it conducts the local business of buying milk. At that station the neighboring farmers deliver their milk. The activity affected by the regulation is essentially local in Penn-

sylvania. Upon the completion of that transaction the respondent engages in conserving and transporting its own property.

Gentlemen, so much for the State laws and their construction by the United States Supreme Court, to the effect that production is not commerce. Let us next turn to acts of Congress, which have been examined by the United States Supreme Court, in order to determine what they say about those acts of Congress.

The Court has held that these regulations of production by the State are not a burden on interstate commerce and therefore not in violation of the commerce clause.

There is a series of district court cases, and in order to make this brief absolutely complete, we have cited those decisions, among them being *U. S.* v. *Boyer* (85 Fed. 425, W. D. Mo. (1898)). There the court had under consideration the constitutionality of an act of Congress purporting to grant the Secretary of Agriculture power to appoint inspectors at packing houses engaged in slaughtering cattle intended for interstate and foreign markets. The court held in a well-reasoned opinion that packing houses, slaughtering cattle for interstate and export trade, were not engaged in interstate commerce. In the course of the opinion the following language appears (p. 432):

> What is commerce? Is it manufacturing? Is it slaughtering cattle and sheep and hogs? If so, why is not farming, or stock raising, or manufacturing lumber, or mining? For all these enter into commerce, both domestic and foreign, and are intended for both.

To the same effect is *Acme, Inc.* v. *Besson* (10 F. Supp. 1, N. J. (1935)), in which the court uses this language:

> Manufacture is transformation—the fashioning of raw materials into a change of form for use. The functions of commerce are different. The buying and selling and the transportation thereto constitute commerce.

To the same effect is *Gebelein, Inc.* v. *Milbourne* (12 F. Supp. 105, E. D. La. (1935)).

Now, gentlemen, here follows the district court opinion, in *United States* v. *Eason Oil Co.* (8 F. Supp. 365, W. D. Okla. (1934)); (we have placed this case out of its regular order, because of it supreme importance) arising in the western district of Oklahoma, wherein the United States under the National Industrial Recovery Act sought to enjoin the oil company from drilling on a 10-acre tract of land in Oklahoma, the code under the act prescribing one well to each 40 acres. The opinion, by Judge Vaught, denying relief to the Government, is remarkable for its clarity and extensive collation and discussion of authorities on the question here involved. The judge follows the distinctions between production and commerce and holds that the Federal Government has no constitutional right to restrain the drilling of an oil well within the boundaries of the respective States.

Now, I am not going to read at length from that opinion, because the quotation is long; but the court refused to restrain the drilling of the well within the boundary of a sovereign State because of the fact that the Federal Government had no right under its constitutional power to regulate interstate and foreign commerce in relation to the production and drilling of oil wells.

Mr. Cole. Those are decisions of a lower Federal court?

Mr. Blalock. Yes, sir; I said that I am citing district court decisions at this time.

Mr. Cole. I did not understand you.

Mr. Blalock. And, they are cited there, if the committee please, in order to give every case that could be found directly in point on this question and we were unable to find even a district court case that holds that production is commerce.

Mr. Wolverton. Mr. Blalock, it would seem to me that your discussion of the question does not draw any distinction between the character of oil as a commodity and shoes and clothing, and whatever else you have referred to. On the theory that oil is a national resource, that it is depletable, that it is irreplaceable, and on the assumption that it is necessary not only in our economic life but also in our national security in promoting our national defense, seems to me to create a distinction to be drawn between a commodity of that character and one such as wheat, corn, clothing, or shoes.

Mr. Blalock. No, sir. To me it does not, Mr. Wolverton. The fertility of the soil is an exhaustible natural resource; coal is an exhaustible natural resource. It is a question of degree, of time, during which it may be exhausted.

Engineering science is not an exact science. It has not advanced sufficiently to be able to tell this committee whether oil will be exhausted, and by that, I mean crude petroleum in natural resources, in 50 years or 500 years, or 5,000 years.

I do not believe that Congress has the power to assume something that it does not know, for the purpose of putting a different construction on the Constitution of the United States from that which has been universally followed for 150 years.

Mr. Wolverton. Well, for the purpose of this discussion, you would not dispute that oil is a very important commodity to our national defense?

Mr. Blalock. I think that is undoubtedly true, and I think that water and other commodities are, too.

Mr. Wolverton. Assuming that is true, suppose it was definitely established to the satisfaction of Congress that the reserve of oil was such that our future defense was in danger if we did not make proper provision for preventing waste of the oil we have. Is it your opinion that there would be no power under the Constitution for Congress to pass legislation that would protect the national defense in such a case?

Mr. Blalock. If Congress came to that conclusion that it was an exhaustible natural resource and there was imminent danger of an immediate exhaustion of it, and that preventable waste was taking place, and that the States could not handle the situation, and that substitute and alternative fuels don't and won't exist, then my only recommendation to Congress would be to proceed in the good old North American way of submitting a constitutional amendment to the people of the United States of America and seek additional power that you do not have today.

Mr. Wolverton. Well, I assume from your answer then that you have the opinion that until such an amendment were passed that Congress, in its duty to protect the general welfare and our national security, would be helpless.

Mr. Blalock. No, sir; I do not, because I think under your duty and privilege to provide for the national defense, that the Constitution already provides you a specific and ample manner of doing it.

Mr. Wolverton. What is it?

Mr. Blalock. By laying taxes for the purpose of purchasing oil lands, if you do not have enough already; by conserving the natural resources on the lands that the Federal Government now owns; by buying oil either above or below ground and paying the people who own it just compensation for it; and you can buy, Mr. Wolverton——

Mr. Wolverton. But——

Mr. Blalock. Pardon me, please—for just a small fraction of some of the wasteful expenditures that have been made by this Congress in the past 6 or 8 years, you could buy enough reserves of oil yet unproduced to take care of the Army and Navy for 5,000 years.

Mr. Wolverton. Will you repeat that?

Mr. Blalock. I said for a small part of the money that has been spent by the Federal Government during the past 6 or 7 years you could buy oil reserves yet unproduced sufficient to last the Army and Navy, in my opinion, for the next—did I say 500 or 5,000—5,000 years, it is immaterial. I was just repeating it, because you asked me and I wanted to get it right.

Mr. Wolverton. I was aware that we had spent a good bit of money in the last 6 or 7 years, but I did not know that I would ever hear a Texan admit it to the extent you have.

Mr. Blalock. By a Texan—well, Mr. Wolverton, I think that you have known me for a good many years, and I think you have found me bitterly opposed to profligate waste of money by Government.

Mr. Wolverton. I will admit that the more I see of Texans, the better I like them.

Mr. Blalock. Thank you. We Texans believe in economy in Government.

Mr. Crosser. Mr. Chairman, may I ask a question?

Mr. Cole. Yes, indeed.

Mr. Crosser. In talking about the ability to go out and buy oil that is already produced, for national defense; if the known oil lands were really necessary for the national defense, might they not be condemned too, if it was shown necessary for public use?

Mr. Blalock. You mean lands owned by other than the United States?

Mr. Crosser. Yes.

Mr. Blalock. Yes, sir.

Mr. Crosser. We could condemn them?

Mr. Blalock. In that connection, I made an examination of the authorities and I came to the conclusion that the Federal Government under the right of eminent domain——

Mr. Crosser. That is what I mean.

Mr. Blalock. Can condemn. In other words, if the people won't sell—you know, the framers of the Constitution took care of almost every emergency that can be conceived of.

Mr. Crosser. Except preserving oil for our national defense?

Mr. Blalock. They have taken care of it by leaving it within the police power of the several sovereign States. That, incidentally, gentlemen of this committee, the States are doing and doing well—well, I had better confine myself to a legal argument at this time.

Mr. Wolverton. We do not mind referring to politics.

Mr. Blalock. What I was about to say, Mr. Wolverton, is that all the reports to the contrary notwithstanding, there is no great waste of crude petroleum taking place in this country. Certainly not sufficient—I am talking about preventable physical waste—there is not sufficient certainly to change the American system of government and turn over to a bunch of bureaucrats in Washington the control of the internal affairs of the various sovereign States.

This Government has one distinguishing characteristic from all of the others, and it is the thing that has made it great and made it possible for the people to enjoy the blessings of liberty, and that is the dual form of government.

Let us put a stop to this making war on the States; let us respect this Government; let us quit instilling into the hearts and souls of the people of the various States fear of the swarm of Federal agents that have invaded us in the past few years like the locusts of Egypt.

Mr. WOLVERTON. How many years do you think that has been?

Mr. BLALOCK. To be specific, I think it has been about 6 or 7, but there were too many of them before then.

Give us a chance gentlemen, back in the States, and I am pleading for the people back there and telling you how they feel. Give them a chance again to look with respect upon the Federal man when he comes; we demand the right to love our Government instead of fearing it; give us a chance to mind, just a little bit of, our own private personal business.

We are not going to throw the oil of America away. As a matter of fact, the oilmen own it. Why should they be the ones who want to destroy it?

Our progress has been made under a system of free enterprise until today you have the greatest reserves that have ever been known in the history of this country. In 1925 the Federal Oil Conservation Board got a little bit excited and said that there was great danger of a shortage of crude petroleum. At that time we had five and one-half billion barrels of discovered reserves, estimated producible by ordinary means of flow and pump. Since then we have used thirteen and one-half billion of that five and one-half billion barrels, and we have have between 17 and 22 billion on hand today.

Does that look like there is imminent danger of a shortage of crude petroleum in this country? Does that show waste?

Mr. WOLVERTON. You remember, Mr. Blalock, when the oil interests came before our committee back in 1934 and supported the Disney bill on the theory that oil was a depletable and irreplaceable commodity?

Mr. BLALOCK. Mr. Wolverton, I know that; I was here too. I fought that bill as I have every bill even similar to it.

Mr. WOLVERTON. You know how anxious and insistent I was that they prove to me that the reserves were as limited as they said they were.

Now, they take the other viewpoint today.

Mr. BLALOCK. First, let me answer that.

Mr. WOLVERTON. That is their position.

Mr. BLALOCK. Let me say, please, when you say the oil industry appeared here in 1934 in support of the bill, I was here too; so, let me make a distinction. I was not in favor of the bill, I opposed it with all of my small ability, and I represented some of the oil industry; but I can say in that connection, I do remember that many were here supporting it, and I am happy that the real truth has become known to those men and it is a pleasure for me to be here on the same side with them in this opposition or may I be permitted to say, find them on the same side with me. I imagine that that has been the result of a combination of circumstances. Some of the fear to oppose dictatorial bureaucrats, has been dissipated; progress has been made in conservation in the various States. There is a great deal more harmony today and a better understanding then there was then.

Then again, I have an idea that having experienced and looked upon the degeneracy that has resulted from bureaucratic control in so many industries, they have decided that there could be nothing as bad as that.

Gentlemen, let me go on with this legal argument.

Now, turning to the United States Supreme Court decisions, Mr. Cole, as distinguished from the decisions of the lower courts from which I have just been quoting, we find in *United States* v. *Knight Company* (156 U. S. 1, 39 L. ed. 325 (1894)), the United States sought to cancel, as unlawful, agreements contrary to an act of Congress, contracts between the defendants relating to the purchase of certain Philadelphia sugar refineries and the business of sugar refining in Pennsylvania. The Government contended that a monopoly in sugar refining resulted therefrom and, therefore, should be suppressed under the commerce clause. In an opinion by Mr. Justice Fuller, the court held that the purchase of the Pennsylvania refineries and the intent to manufacture sugar bore no direct relation to commerce. And, in that decision the Court used this language (p. 329):

> Doubtless the power to control the manufacture of a given thing involves in a certain sense the control of its disposition, but this is a secondary and not the primary sense: and although the exercise of that power may result in bringing the operation of commerce into play, it does not control it, and affects it only incidentally and indirectly. Commerce succeeds to manufacture, and is not a part of it.

In *Delaware, L. & W. R. Co.* v. *Yurkonis* (238 U. S. 439, 59 L. Ed. 1397 (1914)), the Court held that an injury occurring when the plaintiff was preparing to mine coal in Pennsylvania was not an injury arising in interstate commerce. In other words, the mining of coal is not commerce.

Of course, you are familiar with the decision in *Hammer* v. *Dagenhart* (247 U. S. 251, 62 L. ed. 1101 (1917)), where the constitutionality of a Federal child-labor statute was involved.

Mr. COLE. Mr. Blalock, has that decision been affected by the more recent labor cases?

Mr. BLALOCK. It may have been to some extent, Mr. Cole.

Mr. COLE. In fact, the Court has overruled it?

Mr. BLALOCK. No; not so far as the fundamental principles of the distinction between production and commerce is concerned, and that is something I want to get to in just a minute in this brief.

For instance the Court, in *Hammer* v. *Dagenhart*, said that—

> "Commerce" consists of intercourse and traffic * * * and includes the transportation of persons and property, as well as the purchase, sale, and exchange of commodities. The making of goods and the mining of coal are not commerce, nor does the fact that these things are to be afterwards shipped, or used in interstate commerce, make their production a part thereof.

Those are the fundamental constitutional pronouncements, and the conclusions have not been changed by any cases.

In *United Mine Workers of America* v. *Coronado Coal Co.* (259 U. S. 344, 66 L. ed. 975 (1921)), the coal company sought to recover from the union damages under the Sherman Antitrust Act on the theory that obstruction of coal mining was a direct obstruction of interstate commerce in coal. In the opinion by Chief Justice Taft, the following language appears (p. 994):

> Coal mining is not interstate commerce, and the power of Congress does not extend to its regulation as such. In *Hammer* v. *Dagenhart* (247 U. S. 251, 272, 62 L. ed. 1101, 1106, 3 A. L. R. 649, 38 Sup. Ct. Rept. 529, Ann. Cas. 1918 E. 724), we said: "The making of goods and the mining of coal are not commerce, nor does the fact that these things are to be afterwards shipped or used in interstate commerce make their production a part thereof." (*Delaware, L. & W. R. Co.* v. *Yurkonis*, 238 U. S. 439, 59 L. ed. 1397, 35 S. Ct. Rep. 902.)

Now, gentlemen, we come at this stage to a consideration of three important decisions wherein the National Industrial Recovery Act, the Agricultural Adjustment Act, and the Guffey Coal Act were declared unconstitutional by our Supreme Court.

The first of these is *Schechter* v. *U. S.* (295 U. S. 495, 79 L. ed. 1570 (1935)). The opinion is by Chief Justice Hughes, with a concurring opinion by Justice Cardozo. There was no dissent. The Schechters were convicted of violating certain provisions of an Industrial Code of Fair Competition adopted under the National Industrial Recovery Act. In reversing the conviction and holding that the act was unconstitutional, the court considered the validity of the codes under the commerce clause and said (p. 1587):

> (1) Were these transactions "in" interstate commerce? Much is made of the fact that almost all the poultry coming to New York is sent there from other States. But the code provisions as here applied do not concern the transportation of the poultry from other States to New York or the transactions of the commission men or others to whom it is consigned or the sales made by such consignees to defendants. When defendants had made their purchases whether at the West Washington Market in New York City or at the railroad terminals serving the city or elsewhere the poultry was trucked to their slaughterhouses in Brooklyn for local disposition. The interstate transactions in relation to that poultry then ended. Defendants held the poultry at their slaughterhouse markets for slaughter and local sale to retail dealers and butchers who in turn sold directly to consumers. Neither the slaughtering nor the sales by defendants were transactions in interstate commerce.

That is the Schechter case. That is the one which was decided under the National Industrial Recovery Act, where the Court plucked the feathers out of the tail of the blue eagle, thank God.

The second case is *United States* v. *Butler* (297 U. S. 1, 80 L. ed. 477 (1935)), wherein the Court had under consideration the constitutionality of the Agricultural Adjustment Act. This case is important for two reasons: First, because the Government (Mr. Reed arguing, then Solicitor General and now a member of the Court) did not even attempt to uphold the validity of the act under the commerce clause (p. 487), thus recognizing that "production" was not "commerce," and, second, because the Court unequivocably asserts that the act is one regulating agricultural production and that Congress has no power to regulate agricultural production. The opinion is by Mr. Justice Roberts.

On the first point, the Court says (p. 487):

> Article I, section 8 of the Constitution vests sundry powers in the Congress. But two of its clauses have any bearing upon the validity of the statute under review.
>
> The third clause endows the Congress with power to regulate commerce * * * among the several States. Despite a reference in its first section to

> a burden upon and an obstruction of the normal currents of commerce the act under review does not purport to regulate transactions in interstate or foreign commerce. Its stated purpose is the control of agricultural production a purely local activity in an effort to raise the prices paid the farmer. Indeed the Government does not attempt to uphold the validity of the act on the basis of the commerce clause which for the purpose of the present case may be put aside as irrelevant.

Gentlemen, that is pretty plain talk about whether production is commerce.

On the second point, the Court say (p. 489):

> We are not now required to ascertain the scope of the phrase "general welfare of the United States" or to determine whether an appropriation in aid of agriculture falls within it. Wholly apart from that question another principle embedded in our Constitution prohibits the enforcement of the Agricultural Adjustment Act. The act invades the reserved rights of the States. It is a statutory plan to regulate and control agricultural production a matter beyond the powers delegated to the Federal Government. The tax the appropriation of the funds raised and the direction for their disbursement are but parts of the plan. They are but means to an unconstitutional end.
>
> From the accepted doctrine that the United States is a government of delegated powers, it follows that those not expressly granted, or reasonably to be implied from such as are conferred, are reserved to the State or to the people. To forestall any suggestion to the contrary, the tenth amendment was adopted. The same proposition, otherwise stated, is that powers not granted are prohibited. None to regulate agricultural production is given, and therefore legislation by Congress for that purpose is forbidden.
>
> It is an established principle that the attainment of a prohibited end may not be accomplished under the pretext of the exertion of powers which are granted.

Now, gentlemen, applying the test laid down by the Supreme Court recently in that case—

> To forestall any suggestion to the contrary, the tenth amendment was adopted. The same proposition, otherwise stated, is that powers not granted are prohibited. None to regulate agricultural production is given, and therefore legislation by Congress for that purpose is forbidden—

where in the Constitution of the United States of America is to be found the clause which grants to Congress the right to regulate the production of oil? In my searches through this historical and immortal document, I fail to find the word mentioned, just as the Court failed to find "agriculture."

The last of this trinity of cases is *Carter* v. *Carter Coal Company* (298 U. S. 238, 80 L. ed. 1160 (1935)), wherein the Court struck down the so-called Guffey coal bill.

Mr. Cole. Mr. Blalock, before leaving the Agricultural Adjustment Act, won't you discuss the *Mulford* v. *Smith* case?

Mr. Blalock. Yes, sir; I am coming to the *Mulford* v. *Smith* case. I discuss that later in the brief.

Mr. Cole. That is the tobacco case. It is quite important, is it not?

Mr. Blalock. I take that up over here under these new decisions of the Court, it is to be found on page 38 of the brief.

Mr. Cole. That is the most recent decision?

Mr. Blalock. Yes, sir. I was going to discuss it on pages 37 and 38 of this brief.

Incidentally the court in that case used this specific language:

> The statute does not purport to control production.

That is the *Mulford* v. *Smith* case.

Mr. Cole. Yes; but the act was attacked as being a statute intended to control production?

Mr. BLALOCK. Yes; but the Court found that it does not do it.

Now, it is admitted here that this bill is for that purpose alone.

How can the Court find that this bill that we are considering here does not purport to control production when the authors of it come before this committee and testify that that is what they did do, and when all you have got to do is just to take a cursory glance at it to determine that, and that is all that it does do, else, why are we talking about conservation; physical waste? If this is not a production control bill, then the whole hearings from their inception have progressed on an erroneous basis.

In *Mulford* v. *Smith*, the court by plain language stated that the bill did not purport to control production, whereas this bill does not purport to do anything else.

Now, getting back to that Guffey Coal Act, wherein the Court struck down the so-called Guffey coal bill. The act was designated "Bituminous Coal Conservation Act of 1935." I would like to call the committee's attention to the fact that H. R. 7372 here under discussion is designated as "Petroleum Conservation Act of 1939." So, they start off pretty much the same. The Guffey coal bill purported to regulate the bituminous coal industry and the Government sought, among other things, to support the constitutionality of the act under the commerce clause. The court's consideration of this question begins with the following language (p. 1131):

> Since the validity of the act depends upon whether it is a regulation of interstate commerce, the nature and extent of the power conferred upon Congress by the commerce clause becomes the determinative question in this branch of the case. The commerce clause vests in Congress the power "to regulate commerce with foreign nations, and among the several States, and within the Indian tribes." The function to be exercised is that of regulation. The thing to be regulated is the commerce described. In exercising the authority conferred by this clause of the Constitution, Congress is powerless to regulate anything which is not commerce, as it is powerless to do anything about commerce which is not regulation. We first inquire, then: What is commerce?

Now then, I think this is the case to end all cases, so far as H. R. 7372 is concerned.

Thereafter, the court considers the distinction between commerce on the one hand and production and manufacture on the other, analyzes a number of cases and quotes therefrom, and holds that mining is not commerce. The following appears in the opinion (pp. 1184, 1185):

> The same rule applies to the production of oil.

Now, they held that coal production was mining. Coal mining was production, and that you could not regulate it, and it is an exhaustible natural resource. It is necessary and desirable to use in preparing for the national defense. And, they held that Congress had no power to regulate production of coal, and then they said:

> The same rule applies to the production of oil.
>
> Such production is essentially a mining operation and therefore is not a part of interstate commerce even though the product obtained is intended to be and in fact is immediately shipped in such commerce (*Champlin Ref. Co.* v. *Corporation Commission*, 286 U. S. 210, 235, 76 L. ed. 1062, 1078, 52 S. Ct. 559, 86 A. L. R. 403). One who produces or manufactures a commodity, subsequently sold and shipped by him in interstate commerce, whether such sale and shipment were originally intended or not, has engaged in two distinct and separate activities. So far as he produces or manufactures a commodity, his business is purely local. So far as he sells and ships, or contracts to sell and ship, the commodity to cus-

tomers in another State, he engages in interstate commerce. In respect of the former, he is subject only to regulation by the State; in respect of the latter, to regulation only by the Federal Government (*Utah Power & L. Co.* v. *Pfost*, 286 U. S. 165, 182, 76 L. ed. 1038, 1047, 52 S. Ct. 548). Production is not commerce; but a step in preparation for commerce (*Chassaniol* v. *Greenwood*, 291 U. S. 584, 587, 78 L. ed. 1004, 1006, 54 S. Ct. 541).

We have seen that the word "commerce" is the equivalent of the phrase "intercourse for the purposes of trade." Plainly the incidents leading up to and culminating in the mining of coal do not constitute such intercourse. The employment of men, the fixing of their wages, hours of labor, and working conditions, the bargaining in respect of these things—whether carried on separately or collectively—each and all constitute intercourse for the purposes of production, not of trade. The latter is a thing apart from the relation of employer and employee which in all producing occupations is purely local in character. Extraction of coal from the mine is the aim and the completed result of local activities. Commerce in the coal mined is not brought into being by force of these activities but by negotiations, agreements, and circumstances entirely apart from production. Mining brings the subject matter of commerce into existence. Commerce disposes of it.

Consideration of the foregoing, and of many cases which might be added to those already cited, renders inescapable the conclusion that the effect of the labor provisions of the act, including those in respect of minimum wages, wage agreements, collective bargaining, and the Labor Board and its powers, primarily falls upon production and not upon commerce: and confirms the further resulting conclusions that production is a purely local activity. It follows that none of these essential antecedents of production constitutes a transaction in or forms any part of interstate commerce (*A. L. A. Schechter Poultry Corp.* v. *United States*, *supra*, 295 U. S. 542, et seq., 79 L. ed. 1587, 55 S. Ct. 837, 97 A. L. R. 947). Everything which moves in interstate commerce has had a local origin. Without local production somewhere, interstate commerce, as now carried on, would practically disappear. Nevertheless, the local character of mining, of manufacturing, and of crop growing is a fact, and remains a fact, whatever may be done with the products.

Mr. Cole. Mr. Blalock, I announced a session at 2 o'clock this afternoon. In order to get back by that time I suspect that we will have to suspend.

Mr. Blalock. Well, I thank you gentlemen for the courtesy you have extended. I did not have any idea it would take this long.

Mr. Cole. You are always so interesting. We will give you more time.

Mr. Blalock. I will tell you what I want to do. I want to get over and scotch once and for all this idea that some of these new cases that have come down hold that production is commerce, cases, such as the National Labor Relations Board cases, and when I do that, I will be through. I take it that it is admitted by everybody that the States certainly have the right to regulate the production of oil; but, I put that discussion in the brief, so that there could not be any question about it. I will briefly take up the proposition that the Federal Government has the right to purchase oil lands, under the provisions provided in the Constitution for National Defense, and I think I can get through very shortly.

Mr. Blalock. I certainly will not take any more time than the committee wants me to.

Mr. Cole. We will recess until 2 o'clock.

(Thereupon, at 12:55 p. m., a recess was taken until 2 p. m. of the same day.)

AFTERNOON SESSION

(The committee reassembled, pursuant to the taking of recess, at 2 p. m., Hon. William P. Cole, Jr., presiding.)

Mr. Cole. The committee will be in order. You may proceed, Mr. Blalock.

STATEMENT OF JACK BLALOCK—Resumed

Mr. BLALOCK. I believe at the time of the recess, I had just completed a discussion of the opinion in the *Carter* v. *Carter Coal Company case* in which the United States Supreme Court struck down the Guffey Coal Act.

Now, as further authority that the Federal Government has no power to control the production of petroleum within the boundaries of the several States on privately-owned or State-owned land, I would like to call the committee's attention to an opinion filed by the Hon. Charles Evans Hughes on May 27, 1926. I use the words "Hon. Charles Evans Hughes", because at the time of the preparation of this opinion, he was in the practice of law, in between the time when he was Associate Justice and subsequently became Chief Justice of the United States.

We cite this legal brief prepared by Mr. Hughes and filed by him with the Federal Oil Conservation Board with respect to the rights of Congress to regulate production of petroleum within the boundaries of the respective States. Mr. Hughes arrived at the conclusion and very forcefully argued that Congress does not have the power to control the production of petroleum within the boundaries of the several States, and among other things in his brief, he said:

> Petroleum lies beneath the surface of the earth. The territory now under consideration is a part of the domain of the State over which the State has sovereign jurisdiction and control except as the State power is limited by the Federal Constitution. Production is not commerce and the production of petroleum within a State is not interstate commerce. The case of petroleum, in this respect, appears to be the same as that of coal. As to coal, the Supreme Court of the United States, by Mr. Chief Justice Taft, said upon this point in the *United Mine Workers of America* v. *Coronado Coal Co.* (259 U. S. 407, 408):
>
> "Coal mining is not interestate commerce, and the power of Congress does not extend to its regulation as such." In *Hammer* v. *Dagenhart* (247 U. S. 251, 272), we said: "The making of goods and the mining of coal are not commerce, nor does the fact that these things are to be afterwards shipped or used in interstate commerce make their production a part thereof. *Delaware L. & W. R. Co.* v. *Yurkonis* (238 U. S. 439)." Obstruction to coal mining is not a direct obstruction to interstate commerce in coal, although it, of course, may affect it by reducing the amount of coal to be carried in that commerce."
>
> Again, it was said by the Supreme Court of the United States in *Oliver Iron Mining Co.* v. *Lord* (262 U. S. 171, 176):
>
> "Mining is not interstate commerce, but like manufacturing is a local business, subject to local regulation and taxation. *Kidd* v. *Pearson* (128 U. S. 1, 20; *Capital City Dairy Co.* v. *Ohio* (183 U. S. 238, 245); *Delaware, L. & W. R. Co.* v. *Yurkonis* (238 U. S. 439, 444); *Hammer* v. *Dagenhart* (247 U. S. 251, 272); *United Mine Workers* v. *Coronado Coal Co.* (259 U. S. 344, 410). Its character in this regard is intrinsic, is not affected by the intended use or disposal of the product, is not controlled by contractual engagements, and persists even though the business be conducted in close connection with interstate commerce. *Cornell* v. *Coyne* (192 U. S. 418); *Browning* v. *Waycross* (233 U. S. 16, 22); *Delaware L. & W. R. Co.* v. *Yurkonis* (238 U. S. 439, 444); *General R. Signal Co.* v. *Virginia* (246 U. S. 500); *Hammer* v. *Dagenhart* (247 U. S. 251, 272); *Arkadelphia Mill Co.* v. *St. Louis Southwestern R. Co.* (249 U. S. 134, 151); *Crescent Cotton Oil Co.* v. *Mississippi* (257 U. S. 129, 136); *Reisler* v. *Thomas Colliery Co.* (260 U. S. 245).
>
> "The ore does not enter interstate commerce until after the mining is done * * *."
>
> See also, *United Leather Workers International Union* v. *Herkert & Meisel Trunk Co.* (265 U. S. 457, 464, 465). * * *
>
> It may be therefore safely taken for granted that, under the power to regulate commerce, Congress has no constitutional authority to control the mere production of petroleum on lands (other than Indian lands) within the territory of a State. All plans for requiring unit operation or otherwise, which involve the assertion of such an authority on the part of Congress, do not require discussion.

They proceed from an utterly erroneous conception of Federal power. It does not further the policy of conservation to take up the public attention with futile proposals which disregard the essential principles of our system of government.

Now, gentlemen of the committee, we feel that in view of the long list of eminent authorities which have been cited and the clear and logical analyses made by the courts and their forceful restatement of the constitutional principles involved can leave no doubt as to the unconstitutionality of H. R. 7372, and it is our firm conviction that it cannot be sustained under the commerce clause of the Federal Constitution.

Now, gentlemen, I wish to take up for discussion with the committee a series of cases, recent cases, by the Supreme Court; the National Labor Relations Act cases, and I am going to quote extensively from these opinions and from this brief.

The foregoing fundamental principles of constitutional law, which must govern us in our consideration of the constitutionality of H. R. 7372, find no contradiction in the National Labor Relations Board cases—*National Labor Relations Board* v. *Jones & Laughlin Steel Corporation* (301 U. S. 1, 81 L. Ed. 893); *Santa Cruz Fruit Packing Co.* v. *National Labor Relations Board* (303 U. S. 453, 82 L. Ed. 954); *Consolidated Edison Co.* v. *National Labor Relations Board* (305 U. S. 197, 83 L. Ed. 126). These cases are not in point, but because of the probable contentions of the advocates of this bill, we discuss them here in order to show their inapplicability.

The *Jones & Laughlin case* is the parent of all these National Labor Relations Board cases. Here the Supreme Court had under consideration the constitutionality of the National Labor Relations Act, legislation passed by Congress with the hope that it would eliminate serious labor disputes in the basic industries. The Government sought to uphold the act on the ground that labor controversies obstructed and adversely affected interstate commerce.

Interstate commerce, upon the ground that labor controversies obstructed interstate commerce. Not production, but labor disputes and controversies.

The company challenged the act as an attempt to regulate all industry, a right not granted the Federal Government but reserved by the tenth amendment to the States. A divided court—5 to 4—held that Congress in enacting this law was duly conscious of the constitutional limitations imposed upon Federal power and, therefore, the obstructions and interferences arising from labor controversies must be direct in their effect and the commerce contemplated by the act must be interstate and foreign—thus conceived, the National Labor Relations Act was constitutional.

Mr. Cole. In that case, while the act was held constitutional, the thing regulated was not interstate commerce, as you suggested in the early part of your brief.

Mr. Blalock. The thing that is regulated here is labor disputes and labor crises which under the particular facts of this particular case, the court, being bound by the findings of the Board, held was a direct burden and obstruction of interstate commerce. It was on that theory and that theory alone that it was sustained.

Now, the distinction between the National Labor Relations Act cases, this trinity of cases, and the present bill here under consideration I believe is perfectly obvious. It regulated or sought to regulate and prevent a burden being placed on interstate commerce. The facts proving that it did create a burden, by virtue of a labor dispute and a labor crisis. The present bill, H. R. 7372, here under consideration does not seek to prevent a burden from being placed on interstate commerce. It seeks to regulate the production of petroleum within the boundaries of a State. The one is a regulation of labor disputes. The other is a regulation of production. Therefore, the decision holding the National Labor Relations Act constitutional is not in point, so far as this bill here under consideration is concerned. It is not in point. In addition to that fact, and I want to point this fact out to the committee, the Court in its language which I am going to quote from pointed out that there is no effort to regulate all labor disputes, but only those where the facts in the case themselves prove beyond any doubt, or at least to the Board, whose findings are binding on the Court, that a direct burden does exist.

H. R. 7372, being a bill seeking to regulate the production of a commodity within the boundaries of a State, regulates not only some wells which under the statement of facts might create a burden upon commerce; it regulates the production from every well in every oil field in the entire United States.

The Court, in the majority opinion—written by Chief Justice Hughes, who in fact has written the opinions of the Court in all of the basic cases in which the National Labor Relations Act is involved—considered three questions that are pertinent here. The first was with reference to the scope of the National Labor Relations Act. Under this head, the Court says (p. 907):

> First. *The scope of the act.*—The act is challenged in its entirety as an attempt to regulate all industry, thus invading the reserved powers of the States over their local concerns. It is asserted that the references in the act to interstate and foreign commerce are colorable at best; that the act is not a true regulation of such commerce or of matters which directly affect it but on the contrary has the fundamental object of placing under the compulsory supervision of the Federal Government all industrial labor relations within the Nation. The argument seeks support in the broad words of the preamble (sec. 1) and in the sweep of the provisions of the act, and it is further insisted that its legislative history shows an essential universal purpose in the light of which its scope cannot be limited by either construction or by the application of the separability clause.

Now, this is the contention as stated by the opponent.

> If this conception of terms, intent and consequent inseparability were sound, the act would necessarily fall by reason of the limitation upon the Federal power which inheres in the constitutional grant, as well as because of the explicit reservation of the tenth amendment. *A. L. A. Schechter Poultry Corp.* v. *United States*, 295 U. S. 495, 549, 550, 554, 79 L. Ed. 1570, 1590, 1592, 55 S. Ct. 837, 97 A. L. R. 947. The authority of the Federal Government may not be pushed to such an extreme as to destroy the distinction, which the commerce clause itself establishes, between commerce "among the several States" and the internal concerns of a State. That distinction between what is national and what is local in the activities of commerce is vital to the maintenance of our Federal system.

Continuing, the court further says:

> We think it clear that the National Labor Relations Act may be construed so as to operate within the sphere of constitutional authority. The jurisdiction conferred upon the Board, and invoked in this instance, is found in section 10 (a), which provides:
>
> "Sec. 10 (2): The Board is empowered, as hereinafter provided, to prevent any person from engaging in any unfair labor practice listed in section 8 affecting commerce."

Now, this is an unfair labor practice:

> The critical words of this provision, prescribing the limits of the Board's authority in dealing with the labor practices, are "affecting commerce." The act specifically defines the "commerce" to which it refers sec. 2 (6).

The bill here under consideration in my opinion does not do that.

> "The term 'commerce' means trade, traffic, commerce, transportation, or communication among the several States, or between the District of Columbia or any Territory of the United States and any State or other Territory, or between any foreign country and any State, or other Territory, or between any foreign country and any State, Territory, or the District of Columbia, or within the District of Columbia or any Territory, or between points in the same State but through any other State or any Territory or the District of Columbia or any foreign country."
>
> There can be no question that the commerce thus contemplated by the act (aside from that within a Territory or the District of Columbia) is interstate and foreign commerce in the constitutional sense. The Act also defines the term "affecting commerce" (sec. 2 (7)):
>
> The term "affecting commerce" means in commerce, or burdening or obstructing commerce or the free flow of commerce, or having led or tending to lead to a labor dispute burdening or obstructing commerce or the free flow of commerce.
>
> This definition is one of exclusion as well as inclusion. The grant of authority to the Board does not purport to extend to the relationship between all industrial employees and employers. Its terms do not impose collective bargaining upon all industry regardless of effects upon interstate or foreign commerce. It purports to reach only what may be deemed to burden or obstruct that commerce and, thus qualified, it must be construed as contemplating the exercise of control within constitutional bounds. It is a familiar principle that acts which directly burden or obstruct interstate or foreign commerce, or its free flow are within the reach of the congressional power. Acts having that effect are not rendered immune because they grow out of labor disputes.

Thus, if the committee please, the majority opinion rejected the contention of the company that the National Labor Relations Act was an attempt to regulate all industry; but it carefully restricted the application of the act to those controversies only, between industrial employers and employees which resulted in direct burdens on and obstructions of interstate and foreign commerce.

Under the question, the application of the act to employees engaged in manufacturing—the printed opinion uses the word "production" but manufacturing is what is discussed—the court says (p. 911):

> Although activities may be intrastate in character when separately considered, if they have such a close and substantial relation to interstate commerce that their control is essential or appropriate to protect that commerce from burdens and obstructions, Congress cannot be denied the power to exercise that control. *A. L. A. Schechter Poultry Corp.* v. *U. S.*, *supra*. Undoubtedly the scope of this power must be considered in the light of our dual system of government and may not be extended so as to embrace effects upon interstate commerce so indirect and remote that to embrace them, in view of our complex society, would effectively obliterate the distinctions between what is national and what is local and create a completely centralized government. Id. The question is necessarily one of degree.

What is the court saying here? Not that manufacturing is commerce, for it is not. It is saying that the distinction between manufacturing and commerce is "not determinative" where interstate activities result in direct and undue obstructions to interstate commerce—where the effect of labor disputes upon interstate commerce is direct, material, and adverse.

Under the remaining question, effects of unfair labor practice in the company's business, the court finds:

> Giving full weight to respondent's contention with respect to a break in the complete continuity of "the stream of commerce" by reason of respondent's

> manufacturing operations, the fact remains that the stoppage of those operations by industrial strife would have a most serious effect upon interstate commerce. In view of respondent's far-flung activities it is idle to say that the effect would be indirect or remote—

Now, the effect of what, if the committee please? The effect of a labor dispute that stopped commerce.

> It is obvious that it would be immediate and might be catastrophic. * * * When industries organize themselves on a national scale, making their relation to interstate commerce the dominant factor in their activities, how can it be maintained that their industrial labor relations constitute a forbidden field into which Congress may not enter when it is necessary to protect interstate commerce from the paralyzing consequences of industrial war?
>
> * * * The steel industry is one of the great basic industries of the United States with ramifying activities affecting interstate commerce at every point. * * * It is not necessary again to detail the facts as to respondent's enterprise.

Here the court makes findings that the company's activities are for the most part interstate in character, and accepting the Labor Board's findings of unfair labor practices, it holds that such practices would have a very immediate and direct effect upon interstate commerce.

Mr. COLE. Was Justice Butler one of the minority?

Mr. BLALOCK. I beg your pardon.

Mr. COLE. Was Justice Butler one of the minority?

Mr. BLALOCK. I think he was, but I am not positive. Someone says yes.

There was a vigorous dissent in this case by four of the justices, with Mr. Justice McReynolds writing the opinion. The dissenting justices recognized and accepted the constitutional principle announced by the majority that Congress has the power, under the commerce clause, to prevent direct and material interference with the conduct of interstate commerce—see the following in the opinion (p. 936):

> That Congress has power, by appropriate means, not prohibited by the Constitution, to prevent direct and material interference with the conduct of interstate commerce is settled doctrine. But the interference struck at must be direct and material, not some mere possibility contingent wholly upon certain events; and there must be no impairment of rights guaranteed.

But they differed radically with the majority over the application of the principle to the facts of the case, holding that the company's activities were local in character and the effect on interstate commerce by the labor controversies were indirect and remote in the highest degree.

From the foregoing, it is obvious that this case is completely inapposite to the regulation of the production of petroleum sought to be authorized by H. R. 7372. It is irrelevant both as to the principles of law announced and as to the facts.

The National Labor Relations Act deals with labor relations in the field of interstate commerce; it does not regulate production. H. R. 7372 on the other hand, seeks to regulate the production of petroleum before it enters commerce; it does not deal with labor relations. The two bills are radically different in their purpose, content, and application. They differ fundamentally in concept.

In the *Jones & Laughlin case*, the court found that the company was primarily engaged in interstate commerce. The ore had already been mined and had moved to the mills where products were being continuously made for immediate shipment. Interstate commerce had already begun. H. R. 7372, however, does not contemplate petroleum moving in commerce. It seeks to prescribe the rules and conditions under which oil and gas may be produced from the ground. As to whether an oil producer spaces his wells 1 to 10 acres or 1 to 40 acres and whether he drills a 7-inch hole or a 10-inch hole and whether he produces from a ¼-inch choke or a 1/64-inch choke—regulation of such matters is what is contemplated by the bill and such matters could have no relation whatever to interstate commerce. But when petroleum is found and brought to the surface, the act—excluding section 19, a penal section—has no further application. Under no theory has commerce begun.

The National Labor Relations Act and H. R. 7372 are also different in their effects—and this is the test prescribed by the majority opinion in the *Jones & Laughlin case.* Accepting the findings and conclusions of the court, labor disputes in industry engaged in interstate commerce seriously obstruct and can entirely stop interstate commerce. The National Labor Relations Act, therefore, by eliminating those disputes, removes such obstructions—its effect is to remove material obstructions to interstate and foreign commerce; and by removing obstructions commerce is speeded up and probably increased. On the other hand, applying the same reasoning to the field of petroleum production, unrestrained production of oil and gas increases the supply available for commerce; it increases commerce. (Increased supply means a cheaper product and a cheaper product results in greater use—thus commerce is increased.) Regulation of such production, however, the kind of regulation contemplated by H. R. 7372, such as the drilling of one well to 40 acres instead of one well to 10 acres, would in fact reduce the supply of oil and gas and therefore to the extent of such reduction constitute an obstruction to commerce. So this bill in its effect would cause an obstruction to commerce, the very thing its proponents claim they seek to eliminate.

Testing H. R. 7372, therefore, by the standard decreed by the Supreme Court of the United States in the *Jones & Laughlin case*—the effect on interstate commerce—it could not be sustained under the commerce clause.

The findings and holdings in the *Jones & Laughlin case*, therefore, in no manner contradict the verity of our analyses and statement of constitutional principles heretofore made in this argument nor do they impeach the foregoing cited decisions of our courts.

Turning now to the *Santa Cruz Fruit Packing Company case, supra*, the company contended that its activities were local in character and the Labor Board was without jurisdiction over the labor dispute involved. A majority of the Court, however, again speaking through Chief Justice Hughes, found under the facts that the company was "directly and largely engaged in interstate and foreign commerce." The Court says:

> It would be difficult to find a case in which unfair labor practices had a more direct effect upon interstate and foreign commerce.

It should be noted in this connection that the fruit had already been grown and brought to the Santa Cruz plant for packing and shipment.

The Court again, however, was careful to restate the limitations within which the act can be applicable:

> The question that must be faced under the Act upon particular facts is whether the unfair labor practices involved have such a close and substantial relation to

> the freedom of interstate commerce from injurious restraint that these practices may constitutionally be made the subject of Federal cognizance through provisions looking to the peaceable adjustment of labor disputes. * * *
>
> It is also clear that where Federal control is sought to be exercised over activities which separately considered are intrastate, it must appear that there is a close and substantial relation to interstate commerce in order to justify the Federal intervention for its protection. However difficult in application, this principle is essential to the maintenance of our constitutional system. The subject of Federal power is still "commerce," and not all commerce but commerce with foreign nations and among the several States. The expansion of enterprise has vastly increased the interests of interstate commerce but the constitutional differentiation still obtains. *A. L. A. Schechter Poultry Corp.* v. *United States*, (295 U. S. 495, 546, 79 L. Ed. 1570, 1588, 55 S. Ct. 837, 97 A. L. R. 947.)
>
> "Activities local in their immediacy do not become interstate and national because of distant repercussions." (Id. p. 554.)
>
> To express this essential distinction, "direct" has been contrasted with "indirect," and what is "remote" or "distant" with what is "close and substantial," Whatever terminology is used, the criterion is necessarily one of degree and must be so defined.

Also in *Consolidated Edison Company case*, supra, the company took the position that the Labor Board had no jurisdiction over its disputes because the company was engaged in furnishing electricity, gas, and steam to the city of New York and Westchester County. Again the court divided on the interpretation of the facts, the majority opinion finding that electric energy was furnished to the New York Central Railroad and other out-of-State railroads, the interstate tunnels, the Western Union Telegraph Co. and various other companies engaged in interstate commerce and held that interstate and foreign commerce was directly affected. The dissenting opinion denied that the company was engaged to any extent in interstate commerce. It is noteworthy in this connection that the dissenting opinion admits that in the *Jones & Laughlin case* and the other allied Labor Board cases, each of the employers was to an extent engaged in interstate commerce. It should also be noted that the electricity furnished the various interstate users had already been generated prior to its movement to such users.

The majority opinion Chief Justice Hughes says:

> Congress did not attempt to deal with particular instances. It created for that purpose the National Labor Relations Board. In conferring authority upon that Board, Congress had regard to the limitations of the constitutional grant of Federal power. Thus, the commerce contemplated by the act (aside from that within a Territory or the District of Columbia) is interstate and foreign commerce. The unfair labor practices which the act purports to reach are those affecting that commerce (sec. 10 (a).) In determining the constitutional bounds of the authority conferred, we have applied the well-settled principle that it is the effect upon interstate or foreign commerce, not the source of the injury, which is the criterion. It is not necessary to repeat what we said upon this point in the review of our decisions in the case of *National Labor Relations Board* v. *Jones & Laughlin Steel Corp.* (301 U. S. 1, 81 L. ed. 893, 57 S. Ct. 615, 108 A. L. R. 1352), supra. And whether or not particular action in the conduct of intrastate enterprises does affect that commerce in such a close and intimate fashion as to be subject to Federal control, is left to be determined as individual cases arise. Ibid., see, also, *Santa Cruz Fruit Packing Co.* v. *National Labor Relations Board* (303 U. S. 453, 466, 467, 82 L. ed. 954, 960, 961; 58 S. Ct. 656).

In other words, H. R. 7372 as to whether or not the oil produced from well A, well B, or well C, in each case would have to be tried separately to determine whether in that particular instance the oil in that particular well produced under the particular circumstances and conditions created a burden on interstate commerce; but even then nowhere in these decisions do you find the statement that the Federal

Government had a right to control the production of the commodity under the guise of regulating interstate commerce. What the court said was in each instance that if the facts justify the findings that a labor crisis, a strike, a labor dispute, was of such importance in the particular case as to create a burden upon interstate commerce, under those particular facts, that then in the opinion of the Court the National Labor Relations Act was constitutional.

I cannot conceive of how the proponents of H. R. 7372, which is designed solely for the purpose of controlling production, lessening production if you please, can find solace or comfort from a restatement of the fundamental constitutional principles by the Court in these three cases.

Now, if the committee will permit, I will turn briefly to the consideration of the farm-aid cases. Among those are *Currin* v. *Wallace, Secretary of Agriculture* (306 U. S. 1, 83 L. Ed. 441); *Mulford* v. *Smith* (307 U. S. 38, 83 L. Ed. 1092); *U. S.* v. *Rock Royal Co-operative Co.* (307 U. S. 533, 83 L. Ed. 1446), which do not lend any support to the defense of H. R. 7372. They also are inapposite.

In the *Currin case* the constitutionality of the Federal Tobacco Inspection Act of 1935 was involved. The plaintiffs, tobacco warehousemen and auctioneers, in Oxford, N. C., sought a declaratory judgment that the said Inspection Act was unconstitutional. The Court again divided, the majority through an opinion by Chief Justice Hughes holding that the act was constitutional and applicable to the plaintiffs under the facts.

The majority opinion says:

> The act states its scope and purposes. S. S. 1, 2. It applies to transactions involving the sale of tobacco at auction as commonly conducted at auction markets. These transactions are carried on by tobacco producers and by persons engaged in the business of buying and selling tobacco in commerce as defined, that is, in commerce which is interstate or foreign or is with or within the Territories or the District of Columbia.

Quoting from the opinion, without quoting it all:

> The auction in such cases is manifestly a part of the transaction of sale. So far as the sales are for shipment to other States or to foreign countries, it is idle to contend that they are not sales in interstate or foreign commerce and subject to congressional regulation. Where goods are purchased in one State for transportation to another the commerce includes the purchase quite as much as it does the transportation.

What they are talking about here is sales, purchases, transportation, movement, and you will not find the word "production" anywhere in there.

Therefore, I say that that case is absolutely inapposite to H. R. 7372.

In *Mulford* v. *Smith*, plaintiffs sought to enjoin as unconstitutional the enforcement of the penalty prescribed by the Agricultural Adjustment Act for sales of tobacco in excess of marketing quotas established under the act. Again by a divided Court, the majority sustained the act. The plaintiffs asserted (among other things) that the act was a statutory plan to control agricultural production and, therefore, beyond the powers delegated to Congress. The Court rejected this contention, saying with reference thereto:

> The statute does not purport to control production. It sets no limit upon the acreage which may be planted or produced and imposes no penalty for the planting and producing of tobacco in excess of the marketing quota. It pur-

ports to be solely a regulation of interstate commerce, which it reaches and affects at the throat where tobacco enters the stream of commerce—the marketing warehouse.

Now, gentlemen, let us analyze that language in connection with H. R. 7372. The Court says in *Mulford* v. *Smith*, the statute does not purport to control production. I say H. R. 7372 proposes to do nothing else but control production. The Court says that the statute "sets no limit upon the acreage which may be planted or produced" and imposes no penalty for the planting and producing of tobacco in excess of the marketing quota. I say H. R. 7372 does exactly that thing which the Court in *Mulford* v. *Smith* said that that statute does not do.

Mr. COLE. Does the court say in the *Mulford case* that the act does not actually control production?

Mr. BLALOCK. The exact language is this: "The statute does not purport to control production."

Mr. COLE. It does not say anywhere that it does not actually control production; the court does not say that?

Mr. BLALOCK. I do not know whether it says "actually" or not, but——

Mr. COLE. That is the real effect of it; that is the real effect of the act, is it not?

Mr. BLALOCK. Definitely not.

Mr. COLE. To control production of tobacco?

Mr. BLALOCK. No; and if the court had found that it was, under the constitutional principles laid down in the decision it would have struck it down.

Mr. COLE. All right, proceed.

Mr. BLALOCK. These two cases are clearly not in point. H. R. 7372 applies solely to the production of petroleum from the ground; in the *Currin case* the tobacco had already been grown and moved to the auction markets and already entered into interstate and foreign commerce; while in the *Mulford case* the act applied only after the tobacco was grown. In fact, in the *Mulford case* the court, as heretofore stated, specifically found that the Act did not purport to control production, thus recognizing and in effect reaffirming the doctrine announced in *U. S.* v. *Butler*, *supra* (where the court struck down the Agricultural Adjustment Act because it did directly attempt to control agricultural production).

Mr. COLE. Mr. Blalock, in your opinion, if the intended effect of the Tobacco Act was not to control production; what was the purpose of it?

Mr. BLALOCK. The purpose of the Tobacco Act?

Mr. COLE. Yes.

Mr. BLALOCK. Well, it said that it was to control the sales of tobacco in excess of marketing quotas, because it would be a burden upon interstate commerce.

Now, it was passed by this Congress. I am definitely of the opinion that the court had found by its express language that it did not seek to control production.

Mr. COLE. Was not a limitation upon the production of tobacco the very thing that Congress had in mind, to effect these purposes?

Mr. BLALOCK. No, sir; I do not think so.

Mr. COLE. I do not think that there were many in Congress at the time who did not think that way.

Mr. BLALOCK. Well, the Government in presenting the case to the court stated that that positively was not the fact. In other words, if I may remind the committee that in that connection——

Mr. COLE (interposing). Well, it was my understanding that the act was attacked particularly in court, as being a statutory plan to control production.

Mr. BLALOCK. It was so attacked and the court found that it was not intended to and did not control production.

Mr. COLE. I do not construe that to be the position of the court.

Mr. BLALOCK. And the court found as a fact that the attack was based on an erroneous conclusion and that it was not a control of production, it did not stop or regulate either planting, growing, or harvesting.

Now, there is one thing that I can say that is complimentary about H. R. 7372. [Laughter.] It is a bald-faced admission on its face that it is nothing but production control. It is argued that it is for the sole and only purpose of controlling the production of petroleum. In other words, I congratulate the draftsman that he did not seek to hide behind language which he did not mean. He just says brazenly, that regardless of the Constitution, Mr. Ickes is going to control production. I think it is out in the open here, and the sole thing from a constitutional standpoint that this committee and this Congress must consider is, is it an effort; is it its purpose; will its effect be; to control production?

Now, if it is, I say to you, sirs, that under an unbroken line of Supreme Court decisions for 150 years it is unconstitutional as an invasion of the sole rights of the sovereign States. That is forbidden to Congress; reserved by the States.

Now, in connection with these tobacco cases, we call attention to *Townsend* v. *Yeomans* (301 U. S. 441, 81 L. Ed. 1210). In this case, the plaintiffs sought a decree from the Federal Court to restrain as unconstitutional the enforcement of a Georgia statute fixing minimum charges for handling and selling leaf tobacco and they charged that the tax placed a direct burden upon interstate commerce in violation of the commerce clause, alleging that practically all of the tobacco grown in the State was shipped out of the State, and so forth. The court rejected this contention, saying:

> Laying on one side the Federal statute, as in no way inconsistent, we find no ground for concluding that the State requirements lay any actual burden upon interstate or foreign commerce. The Georgia act does not attempt to fix the price at the auction sales or to regulate the activities of the purchasers.

Gentlemen, in all earnestness and sincerity we have discussed these cases, the National Labor Relations Act cases and the farm-aid cases, in an effort to show to this committee that under these new decisions which represent, to a certain extent, new reasoning in certain fields of the law, that they are absolutely not in point with reference to this bill here under consideration. These laws were conceived for a different purpose; they have a very different effect from that of production control, and it is our opinion, under the authorities cited, that the Federal Government does not have the power, under its admitted right to regulate interstate and foreign commerce, to control the production of oil within the boundaries of a sovereign State.

Now, there is one section of our brief which calls attention to another fact.

When we start approaching this question we have to take into consideration the rules of property and the land laws of the various States where oil is found. In Texas, oil in place is real estate.

Mr. COLE. You have discussed that before. I do not think there is any doubt about your position being known to the committee.

Mr. BLALOCK. I will pass over that immediately.

The CHAIRMAN. Some of the cases you have quoted from at length.

Mr. BLALOCK. Well, the cases ascertain that, and, of course, it is an admitted proposition that oil in place in Texas is real estate, and I cannot conceive, frankly, how real estate can be commerce or interstate commerce. If it is, why then, I do not know of anything that is not commerce. If you are going to take the lands of New Jersey, the lands of Tennessee, the lands of Texas, the lands of Maryland, and say that they are commerce, why then, indeed, our dual system of government has been destroyed and we have a completely centralized Federal Government.

I think on previous occasions I have discussed with this committee the proposition which I have seriously urged that in the State of Texas the land, the public domain, belongs to the State, and so with the committee's permission——

Mr. COLE. That was in 1934?

Mr. BLALOCK. Yes, sir; in 1934, in 1935, and in 1933.

Mr. COLE. I remember it in 1934.

Mr. BLALOCK. I very seriously urged it. I remember the first time that I was here I discussed that with the committee, and some of those—I guess some of those who "sat on a hill" thought it was an amusing thing, but I notice that one of those who "sat on a hill" has frequently quoted it since as the law.

The sovereign State has the exclusive right to regulate the production of petroleum. I mention this now for this reason, the question was asked this morning if then the Federal Government has no power to regulate the production of petroleum for the purpose of conservation, who does have that power?

All right. That power belongs to the sovereign State in which the production takes place, under the reasonable exercise of its police power, and that police power has the sole right, under a long line of decisions, without a single exception, of regulating the production of petroleum for the purpose of preventing physical waste thereof.

In the brief are some 10 or 15 cases cited which I think will be sufficient to cover the point. I invite your attention to them.

At this point, however, I again remind the committee that if production is commerce and if it is interstate commerce, that all these cases are wrong, because a State cannot place a burden upon nor regulate interstate commerce.

Now, how can Congress constitutionally provide for the national defense in respect to its petroleum needs?

I think we have demonstrated clearly, under the right of the power to provide for the national defense that Congress does not have the right to authorize the Federal Government to control the production of crude petroleum either for the purposes of preventing waste or for any other cause.

Then how can the Nation provide itself with a supply of this valuable resource which is necessary in the national defense? It has the right; Congress has the power, to make an appropriation, if in its judgment, it is wise and necessary to purchase oil already produced, store it in storage tanks on top of the ground against the day when they need it; it has the right to cease production from the national lands which it owns and controls, if in its judgment it is wise, and store it under the ground against the day when it may be needed.

If it is alarmed as to the necessity of doing something for the national defense, it has a right to appropriate money that came from those taxes and duties, and excises, to buy an entire oil field, or a part of an oil field. It can buy land on which production has not yet been found; it can buy production already in existence and close down the wells; it can, under the right of eminent domain and the appropriation of money for payment of just compensation to the owner, if the owner would not sell, condemn this property and pay them for it without violating the due process clause of the Constitution. Thus with contributions by taxpayers, pay the real value of the land and the property then taken from the individual, store the oil there underground, against the day when they may need it.

Mr. Cole. In the exercise of the right of the power of eminent domain, is it necessary for the Federal Government to show necessity for such taking?

Mr. Blalock. Well, I do not know whether it would be or not. If they are contemplating buying any, Mr. Chairman, under the right of eminent domain, I hope that they will not have to show necessity, because I do not think the facts bear it out. The reason I make the statement——

Mr. Cole. The reason I ask you that is because you are offering it as an alternative proposal, that the Federal Government acquire necessary oil deposits.

Mr. Blalock. Yes, sir.

Mr. Cole. You state that Congress has ample power to make appropriations for the purchase of lands, that quite definitely and clearly section 8 gives Congress power to provide for the common defense. As I understood your statement a moment ago you said that power included the right to condemn.

Mr. Blalock. That is correct; that is my opinion.

Mr. Cole. It has been my experience with State law that the preliminary issue is the necessity for the lands to be taken.

Mr. Blalock. Well, is it necessary, or is it a fact that it is necessary to be done for the public uses. I may not understand you because of the distinctions in the definition of "necessity." You mean necessity in the light of the fact that there is a shortage?

Mr. Cole. No; no. I think when the Federal Government or the State exercises the right of eminent domain, it is conceded at least that it must be done for public use or purpose.

Mr. Blalock. Yes.

Mr. Cole. Like condemning lands for a highway, for instance.

Mr. Blalock. That is correct.

Mr. Cole. Where they show the necessity for it.

Mr. Blalock. Yes, sir.

Mr. Cole. Now, is it your understanding that there is a similar burden upon the Federal Government in condemnation proceedings?

Mr. Blalock. I should think that there is no reason that necessity be proven to such extent. In other words, when you have shown that oil is necessary to a proper functioning of the Army and the Navy, that will be sufficient.

When you show that, I believe that that would be all that you would have to show.

Mr. COLE. Assuming Congress would appropriate a sufficient sum to acquire certain oil fields in this country, and assuming further that all of them would have to be condemned, or in such cases as would be necessary to acquire the oil reserves, is it your opinion the Government would be required to prove in court actual necessity for the land, or would the passage of an act by Congress control and that alone be sufficient?

Mr. BLALOCK. I am inclined to think that the passage by Congress of an act saying that it was desirable to acquire sufficient oil, not all of it, by condemnation, accompanied with proper appropriations for compensation, would probably be sufficient.

Mr. COLE. In other words, Congress has the sole power to determine the necessity of this country to have for its defense purposes oil deposits?

Mr. BLALOCK. No, Mr. Cole. Let us not confuse those two statements. I said that the Federal Government undoubtedly had the right to exercise eminent domain for the purchase of oil-bearing lands; that Congress certainly must make the appropriation and must authorize this condemnation proceeding.

Now, that is entirely different from Congress having the power to take private property without due process of law and to go beyond the boundaries of a State on privately owned or State owned lands and control the production of oil upon the theory that some day they might need it.

And I want that distinction drawn clearly.

Now, your other inquiry, I think, is pertinent, and to me it presents a rather difficult question to answer, but I will try to be just as sincere with this committee as I know how.

I believe that an appropriation by Congress of money under section 8, coupled with an authority or authorization to condemn these lands to be used in years to come by the Army and the Navy would probably be sustained. That is entirely separate and apart from Congress in its wisdom sitting here and violating the provisions of the Constitution.

The distinction that I am trying to draw is that, on the one hand, under purchase, under the right of eminent domain and condemnation, you are proceeding according to the orderly processes of government as we understand it and under the right granted to you in the Constitution; but to seek, on the other hand, to go out and control production of oil within the boundaries of a State, when the courts for 150 years have said that it is a right and a power exclusively belonging to the State, I think is an entirely different matter and is strictly and wholly unconstitutional.

Now, let me say on that point——

Mr. WOLVERTON. There is another alternative that you have not advanced, and that is that we could increase importations.

Mr. BLALOCK. Well, I do not know whether Congress could increase importations or not, but it might make it easier to import.

Mr. WOLVERTON. I assume that they could take certain taxes off, and then it would have that effect.

Mr. BLALOCK. Well, if by taking off, you mean a tariff, that that would encourage it, I think undoubtedly it would. I certainly am opposed to it, because it seems to me that all of this trouble is caused because we have too much oil.

Mr. WOLVERTON. What would you think of our letting Mexican oil come in now under the most-favored-nation clause as an alternative?

Mr. BLALOCK. I think it would be totally inconsistent with the policy of Congress in the past of encouraging home industry and attempting to bring us out of these various depressions and recessions and so forth.

You see, your inquiry involves a question of policy for Congress. That is a question of policy. I am discussing power. I think that you have the right to encourage imports or discourage exports by taxation. I have no doubt about that. But I would not advocate that.

Mr. WOLVERTON. You would not advocate that as an addition to the alternative you have already mentioned?

Mr. BLALOCK. I do not quite get it.

Mr. WOLVERTON. I say, you would not advocate that as an addition to the alternative you have already mentioned?

Mr. BLALOCK. No, sir; I certainly would not. I certainly would not do it.

Mr. WOLVERTON. Why?

Mr. BLALOCK. Because, while I am on this question of national defense, I make this statement without fear of successful contradiction: The oil industry of America today, today, instantly, this hour, stands ready and prepared to deliver to the Nation in time of peace or in time of war, an immediately available, at the desired point, ample supply of crude petroleum and its products—the best product manufactured on the face of the earth—an abundant supply—far greater than any amount that man can conceive of needing over a long period of years in war.

When I said immediately available, I am referring to those billions of barrels of oil that through the prudence of the industry itself, and the wholesome constitutional regulation of the States has been built up; that great network of transportation systems, the pipe lines, reaching to every port of America. It can be delivered in unlimited quantities as fast as they can use it, and it is the best product that they can buy anywhere.

The oil industry stands prepared, ready, willing, and anxious, to serve its country in time of war as well as in time of peace.

That is on the question of national defense.

I say to you, with all of the earnestness and sincerity of which my heart is capable, I do not believe that there is another country on the face of the earth that can make that statement. Why? Because no country on the face of the earth has the system of government which has encouraged private enterprise to store up those available supplies for the defense of that system of government in time of stress.

Other countries have reserves. Probably Russia may have as much as the United States, but under a socialized, centralized system of government, where men—and women—are regimented; their brains regimented as well as their bodies, those resources have not been developed. They are not available and they will not be, in my opinion, as long as the people are crushed down by a centralized government administered by bureaucracy.

Mr. WOLVERTON. Would you favor as an alternative an embargo against exportation to Russia?

Mr. BLALOCK. Do I favor an embargo?

Mr. WOLVERTON. Yes.

Mr. BLALOCK. Well, that is another question of policy which has nothing to do with the constitutionality of this question.

Mr. WOLVERTON. Well, that question was prompted from some of the thoughts you have expressed.

Mr. BLALOCK. I do not like Russia much.

Mr. WOLVERTON. I thought that something of that sort might be presumed from your remarks.

But, there is no doubt whatsoever that the oil industry in California is shipping to the very people that you have so severely condemned.

Mr. BLALOCK. I condemn their Government; I have only sympathy for the people. I do not like Russia. I do like Finland.

Mr. WOLVERTON. I received some information yesterday from the west coast in which they say there is the greatest rush of war materials to Japan in many months. The report is dated the 15th. The shipments consist of oil, nitrates, coal, cotton, copper, and other articles.

They have brought additional ships into use for that purpose; and the same is true with reference to Russia; and it occurred to me, with your willingness to offer alternatives, that I would like to know what your thought was as to an embargo as an additional alternative.

Mr. BLALOCK. Well, Mr. Wolverton, I will tell you the truth. I am not much in favor of embargoes. I am a free trader. But, I will say this, that I think the moral and the lesson to be learned from the fact that oil is being shipped, and other raw materials, to Russia, one of the greatest storehouses on earth of those same commodities and raw materials; the lesson and the moral to be learned is Do not let us adopt the same system in this country that Russia adopted over there where those raw materials cannot be developed and made available for the happiness and prosperity of our people and for our immediate use in time of war, because then we might find ourselves in the same fix that Russia is and have to buy it from somewhere else.

Mr. WOLVERTON. Of course, when you use Russia and Japan as illustrations, probably you are inclined to do so, because you knew that you and I agree as to the moral and the lessons to be learned from it.

Mr. BLALOCK. Well, I do.

Mr. WOLVERTON. I do not believe it could be justified on strictly moral grounds.

Mr. BLALOCK. I am certainly against it on moral grounds. I think that there are a lot of other things to be taken into consideration and I am probably not sufficiently well informed or able to help decide this national policy of neutrality.

Mr. WOLVERTON. Of course, the principle that I was bringing to your attention, that of the embargo, would relate to all munitions, not merely those two.

Mr. BLALOCK. That is right. I will say—well, I guess I had better not say it.

Mr. WOLVERTON. Nothing that you would say would be offensive to this committee.

Mr. BLALOCK. Thank you, Mr. Wolverton.

Well, I will say this, in conclusion, and I hope that it will not only not be offensive, but I hope this committee will give it serious consideration.

After a study of this question over a long period of years, and particularly the last 4 months that have been consumed in the preparation of this brief, I am firmly and unequivocally of the opinion that the Federal Government cannot control the production of crude petroleum within the boundaries of a State either under its desire to provide for national defense, or under the guise of the regulation of interstate commerce; or under any other provision of the Federal Constitution.

I am further of the opinion that that power and that right was reserved by the States to themselves and that it is exclusively within the powers of the States, and if you will permit me to disgress just for a moment from this legal argument, I want to say to you gentlemen on the committee, no great crisis exists in the oil industry. There is no emergency. Conditions insofar as waste are concerned are infinitely better every year. We are making progress. We are doing it in the constitutional way. And, we hope to reach that degree of perfection which the Federal Government would like to see us reach, and which we ourselves would like to reach. If you will bear with us, I will give you the word of the regulatory bodies, I will give you the word of the industry, that we will do everything within our power to merit the confidence which we hope that you will express in our ability and in our sincerity to meet this problem. I thank you very kindly for your courteous attention.

Mr. Crosser. Just a moment, please. I would like to ask you a question.

Mr. Blalock. Yes, sir.

Mr. Crosser. If I may just ask one or two questions. Your position is that an operating well is not commerce?

Mr. Blalock. An operating well?

Mr. Crosser. Yes.

Mr. Blalock. Yes; it is not commerce.

Mr. Crosser. Nor the digging of the hole?

Mr. Blalock. Nor the opening of the well, nor the producing of oil.

Mr. Crosser. Yes. Well, it is not a question so much, according to what you say, as to whether it is interstate commerce or intrastate commerce; but whether it is commerce at all. Is that not the question?

Mr. Blalock. Yes, sir. I say that it is not commerce.

Mr. Crosser. How should we determine the meaning of the term "commerce" as we find it in the constitution; by what authorities would you say?

Mr. Blalock. I would refer to the various decisions of the United States Supreme Court, which has construed it to mean sales, transactions, movements and so forth, and not production.

Mr. Crosser. Would it not be more correct to say that the examination of the lexicographers' definitions at the time the Constitution was adopted would be the proper authority to determine the meaning of the language used in the Constitution at that time?

Mr. Blalock. I think certainly we should find out what the thoughts were of the framers of the Constitution themselves. And I think certainly we have shown that.

Mr. Crosser. And they say, do they not, both Webster, Johnson, and probably other dictionaries of the time of the adoption of the

Constitution say that commerce consists of the exchange of commodities between man and man or between people; is that no so?

Mr. Blalock. The exchange of commodities?

Mr. Crosser. I say commodities.

Mr. Blalock. Yes, sir.

Mr. Crosser. The interchange of commodities; is that not it?

Mr. Blalock. Yes; commodities. I think that is a little broader than the legal definition. But, I am perfectly willing to go along with you.

Mr. Crosser. I think even the legal definition would be all right. I do not think that it differs very much from the standard authorities on English at the time. A commodity, of course, is not a piece of land.

Mr. Blalock. A commodity is not commerce; a commodity is just a commodity. It is certainly not commerce.

Mr. Crosser. No, I would say not; but the interchange of commodities.

Mr. Blalock. Yes.

Mr. Crosser. The interchange of commodities.

Mr. Blalock. The interchange of commodities; that is one of the necessary elements of commerce.

Mr. Crosser. I think that you will find that that is the way that it is defined in the standard dictionaries of the day when the Constitution was adopted.

Mr. Blalock. Yes, sir.

Mr. Crosser. Well, that seems to me to present the real question here, as to whether or not it is commerce, and there is not so much need to consider the question whether it is interstate or intrastate commerce. The question is whether it is commerce at all.

Mr. Blalock. I go along with you there, First, we must determine whether or not it is commerce, and I think that we have clearly demonstrated that it is not commerce; but then even if it is commerce, before the Federal Government would have any authority to do anything about it, then it would have to be interstate commerce.

Mr. Crosser. That is understood.

Mr. Blalock. But, I do not think that you will ever get around to determining whether or not it is interstate commerce, because if it is definitely determined that it is not commerce at all, then it could not be interstate commerce.

Mr. Cole. If that is all, we thank you, Mr. Blalock.

Mr. Wolverton. I would like to ask a question.

Mr. Cole. Just a moment. Mr. Wolverton.

Mr. Wolverton. I am very much interested in the brief that you have submitted. It shows a great amount of work.

Mr. Blalock. Thank you, sir.

Mr. Wolverton. I have no doubt that you are sincere in the viewpoint you express, based upon the decisions of the Supreme Court. It may be that your interpretation of them is the correct one, but I think we must acknowledge that there is a different school of thought in existence.

When this committee conducted hearings 5 years ago, we had that other school of thought presented to us, very forcibly by Mr. Margold, who is the general solicitor of the Interior Department. That viewpoint was directly opposite to that which you have expressed today.

Mr. Blalock. That is correct, sir, and I hope that the record will show clearly that we are directly opposed.

Mr. Wolverton. I am willing for you to take all of the satisfaction you can out of that.

Mr. Blalock. Thank you, Mr. Wolverton.

Mr. Wolverton. But, his interpretation of the cases leads to a different conclusion than yours. He was just as sure that it would be constitutional as you are that an interpretation of the cases would lead to a different conclusion. He was just as sure that it would be constitutional as you are that it is not constitutional.

Mr. Blalock. He was also positive about the codes being constitutional, I held the opposite view.

Mr. Wolverton. Well, I think he may be positive about a good many things that many others do not agree with him on; but the point that I am trying to bring to your attention is this: How certain are you that the Supreme Court as now constituted, or, as it may be in the years that are ahead, either by change of personnel or because of changing conditions, may not look at this in a different way than you have? We are surely aware of the fact that time and again the Supreme Court has reversed itself; sometimes they have done it diplomatically, and sometimes they have done it rather boldly.

Now, your whole objection to this bill, it would seem to me, from the brief, is based very largely upon the legal aspects of it.

Mr. Blalock. The brief was intended only to discuss the constitutional questions. I am opposed to the bill on every ground.

Mr. Wolverton. At least that is what you have presented to us today, namely, that it is unconstitutional.

Mr. Blalock. Yes, sir.

Mr. Wolverton. Now, having in mind that different school of thought, I wonder to what extent can we depend on the Court to take your interpretation.

Mr. Blalock. Mr. Wolverton, in answer to that—I suppose I am a little old fashioned—but I have absolute and complete reverence for law and for constituted authority and for the judiciary of this country. I refuse, so far as I am concerned, to permit myself to speculate upon the possibility that those men who hold that highest of all judicial positions in the world, will deliberately change this form of Government; that it will create a centralized government where before there was a dual form of government. If that time comes——

Mr. Wolverton. I do not think we have to go that far.

Mr. Blalock. I do.

Mr. Wolverton (continuing). To declare an act like this constitutional.

Mr. Blalock. I do.

Mr. Wolverton. Well——

Mr. Blalock. I think that it is the end of the American system of government as we know it.

Mr. Wolverton. In other words if this act should be declared constitutional, that is the end of the American form of government?

Mr. Blalock. As we have known it; most definitely yes, sir; because if this act were to be declared constitutional, being an open, clean-cut case, controlling production within the boundaries of a State, it overturns more than 150 years of precedent with reference to property right; with reference to the division of power between the Federal and State Governments; and I want to say this, that if that time ever comes, and if we are approaching that time, and if anybody has a fear in their minds that we are approaching it, then I hope that the Congress itself will cease experimenting with these dangerous precedents.

I hope that we will hear again the voice of the constitutional lawyers in the halls of Congress. I hope it will be stopped at its inception.

Mr. WOLVERTON. You have an excellent constitutional voice in Congress, from the State of Texas, Judge Sumners.

Mr. BLALOCK. I agree with you, sir, thoroughly; may he continue to be heard and appreciated.

Mr. WOLVERTON. But, to the the view of it that you have expressed is rather startling to me, in view of the fact that when we had the Thompson-Disney bill before us five years ago, which provided for the fixing of quotas and so forth, it was just as seriously objected to by you as being unconstitutional.

Mr. BLALOCK. Yes, sir.

Mr. WOLVERTON. It was advocated at that time by many of those who are at the present time opposing this bill. Certainly they did not think that it was going to change the American form of government by adopting the principles of the Thompson-Disney bill, and that was just as unconstitutional, according to your viewpoint as this is now.

Mr. BLALOCK. That is correct, and I will say this, in that connection, that I have found that the easiest time to put over reforms and foolish changes is when people are in a period of hysteria and suffering, and fear, and I am afraid, frankly, that they were not thinking as clearly then as they are now, and certainly it is most gratifying to me to come before this committee in the year 1940 and find, so far as I can learn, absolutely unanimous opposition to this legislation, with the exception of the Secretary of the Interior, Mr. Ickes, who seems never to tire of reaching out for more power.

Mr. WOLVERTON. Probably he has taekn the viewpoint of Mr. Margold.

Mr. BLALOCK. Evidently they are two hearts that beat as one.

Mr. COLE. That is all. Thank you.

Mr. BLALOCK. Thank you, sir.

Mr. Chairman, if you will pardon me for a minute. I want to ask leave that the brief which I filed with the committee be printed in the record. It is not very long and I have checked up with the reporter, and he tells me that it will take about 9 or 10 pages, and I would like to have the privilege of having it printed in the record, following my remarks.

Mr. COLE. Very well.

Mr. BLALOCK. Thank you very kindly.

(The brief referred to is as follows:)

To the subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, Seventy-sixth Congress, Washington, D. C., Hon. William P. Cole, Jr., chairman

A CITATION AND DISCUSSION OF AUTHORITIES SHOWING THAT HOUSE RESOLUTION 7372 IS UNCONSTITUTIONAL

(Prepared on behalf of the Interstate Oil Compact Commission at the request of Ernest O. Thompson, chairman)

INTRODUCTORY STATEMENT

H. R. 7372 was introduced into Congress by Mr. Cole of Maryland on July 26, 1939. The caption of this bill refers to it as a bill to promote the conservation of petroleum. An examination of the text of H. R. 7372 disclosed, however, that the real effect and purpose of the bill is to provide for Federal control of the production of petroleum within the boundaries of the several sovereign States.

We believe that a brief history of similar proposed legislation, which preceded the introduction of H. R. 7372, will be helpful to those considering the bill now pending.

The first Federal oil control bill was introduced in the Seventy-second Congress. This bill, usually referred to as the Marland-Capper bill, sought by an act of Congress to control the production of oil. It was sponsored by the Secretary of the Interior. It was proposed as an amendment to the National Industrial Recovery Act. After lengthy hearings, the Senate Finance Committee rejected the bill by a vote of 17 to 1. It was also rejected by the House Ways and Means Committee.

The Senate Finance Committee substituted for the Marland-Capper bill, section 9 (c) of the National Industrial Recovery Act. This section sought to authorize the President, at his will, to prohibit the shipment in interstate and foreign commerce of oil or the products thereof produced or withdrawn from storage in excess of that permitted to be produced or withdrawn from storage by State law and valid State orders.

This section 9 (c) was subsequently declared unconstitutional by the Supreme Court of the United States, principally for the reason that it constituted an unlawful delegation of authority to the President.

The subject matter of the original section 9 (c) was at a subsequent session of Congress again enacted into law in what has commonly been referred to as the Connally Act. This bill was enacted by the Congress in an effort to cure the objections of the Supreme Court of the United Statss to the original section 9 (c). This law is now in force and is being administered by the Department of the Interior. [H. R. 7372, the bill here under consideration, in section 19, after providing for Federal control of the production of petroleum, enlarges the scope of the present Connally Act and seeks to make it a Federal offense to ship in interstate commerce petroleum or the products thereof, produced contrary to regulations issued by a Federal Oil Commissioner.]

In the Seventy-third Congress the Thomas-Disney bill was introduced. It was sponsored by the Secretary of the Interior. It was rejected by the House Committee on Interstate and Foreign Commerce after extensive hearings.

Thereafter the so-called Thomas bill was fully considered by this subcommittee of the House Interstate and Foreign Commerce Committee. After extensive hearings in many of the oil-producing States, the said subcommittee refused to recommend its passage to the Congress.

The Marland-Capper bill, the Thomas-Disney bill, and the Thomas bill all sought by their terms to have the Federal Government control and regulate the production of petroleum within the boundaries of the several States. H. R. 7372, here under consideration, which, the testimony shows, was prepared by the Department of the Interior, is but another effort to authorize the Federal Government to control and regulate the production of petroleum within the several States.

In this brief we will not attempt to show the undesirability of the proposed legislation nor the lack of necessity for its passage. We will confine our discussion to the legal questions involved and to showing that H. R. 7372 is unconstitutional.

We discuss, therefore, the following propositions:

(1) Congress has no constitutional authority to control the production of petroleum within the boundaries of the several States under its power to provide for the national defense.

(2) Congress has no constitutional authority to control the production of petroleum within the boundaries of the several States under its power to regulate interstate and foreign commerce.

In the concluding part of the brief, we show that the exclusive power to regulate the production of crude petroleum rests in the sovereign State itself through a reasonable exercise of its police power. We also show that the Congress may properly and constitutionally provide for the national defense by the appropriation and expenditure of public money for that purpose.

PRELIMINARY STATEMENT OF CONSTITUTIONAL PRINCIPLES

H. R. 7372, in its declaration of policy in section 2, predicates its constitutionality upon the right of Congress to provide for an adequate national defense and to regulate commerce among the several States.

It is elementary that the mere declaration by Congress that it is purporting to act pursuant to certain provisions of the Constitution adds nothing to its constitutionality; Congress either has the constitutional right to enact certain legislation or it has not, and a declaration by Congress upon the subject cannot determine its constitutionality.

In *McCullough* v. *Maryland* (4 Wheat. 316, 4 L. Ed. 579), Chief Justice Marshall said:

"Should Congress, in the execution of its powers, adopt measures which are prohibited by the Constitution, or should Congress, under the pretext of executing its powers, pass laws for the accomplishment of objects not intrusted to the Government, it should become the painful duty of this tribunal, should a case requiring such a decision come before it, to say that such an act was not the law of the land."

In *Bailey* v. *Drexel Furniture Co.* (259 U. S. 20, 66 L. Ed. 817), it is said by Chief Justice Taft:

"It is the high duty and function of this Court in cases regularly brought to its bar to decline to recognize or enforce seeming laws of Congress, dealing with subjects not intrusted to Congress, but left or committed by the supreme law of the land to the control of the States. We cannot avoid the duty even though it require us to refuse to give effect to legislation designed to promote the highest good. The good sought in unconstitutional legislation is an insidious feature because it leads citizens and legislators of good purpose to promote it without thought of the serious breach it will make in the ark of our covenant, or the harm which will come from breaking down recognized standards. In the maintenance of local self-government, on the one hand, and the national power, on the other, our country has been able to endure and prosper for near a century and a half."

In *Railroad Retirement Board* v. *Alton R. R. Co.* (295 U. S. 330, 79 L. Ed. 1468), we find the following:

"The statute contains a section broadly declaring the intent that invalid provision shall not operate to destroy the law as a whole. Such a declaration provides a rule which may aid in determining the legislative intent, but it is not an inexorable command."

In *U. S.* v. *Butler* (297 U. S. 1, 80 L. Ed. 477), Mr. Justice Roberts says (p. 486):

"There should be no misunderstanding as to the function of this Court in such a case. It is sometimes said that the Court assumes a power to overrule or control the action of the people's representatives. This is a misconception. The Constitution is the supreme law of the land ordained and established by the people. All legislation must conform to the principles it lays down. When an act of Congress is appropriately challenged in the courts as not conforming to the constitutional mandate the judicial branch of the Government has only one duty—to lay the article of the Constitution which is invoked beside the statute which is challenged and to decide whether the latter squares with the former."

In *Carter* v. *Carter Coal Co.* (298 U. S. 238, 80 L. Ed. 1160), Mr. Justice Sutherland says:

"Certain recitals contained in the act plainly suggest that its makers were of opinion that its constitutionality could be sustained under some general Federal power, thought to exist, apart from the specific grants of the Constitution. The fallacy of that view will be apparent when we recall fundamental principles which, although hitherto often expressed in varying forms of words, will bear repetition whenever their accuracy seems to be challenged."

In view of the language of the courts above quoted, it would appear appropriate at this point to make further restatement of fundamental constitutional principles as contained in various opinions of the United States Supreme Court.

It is common knowledge that at the time the ratification of the Constitution was under consideration, many of the great leaders of our country and many of the common people were gravely concerned about the extent of the rights granted the Federal Government and the extent of the rights retained by the respective States and the people thereof. The controversy was such that only after the people obtained the promise that a Bill of Rights would be immediately submitted, was the Constitution ratified. And pursuant to that promise, the first 10 amendments to the Constitution were proposed by Congress and ratified by the respective States. These 10 amendments were then and are now known as the Bill of Rights.

The ninth and tenth articles are as follows:

"ARTICLE IX

"The enumeration in the Constitution of certain rights, shall not be construed to deny or disparage others retained by the people.

"ARTICLE X

"The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people."

In *Martin* v. *Hunter's Lessee* (1 Wheat. 304, 4 L. Ed. 97), Mr. Justice Story says:

"The Government, then, of the United States, can claim no powers which are not granted to it by the Constitution, and the powers actually granted must be such as are expressly given, or given by necessary implication."

In *Hammer* v. *Dagenhart* (247 U. S. 251, 62 L. Ed. 1101), the following language by Mr. Justice Day appears:

"It may be desirable that such laws be uniform, but our Federal Government is one of enumerated powers: 'this principle,' declared Chief Justice Marshall in *McCullough* v. *Maryland* (4 Wheat. 316, 4 L. Ed. 579), 'is universally admitted'."

In *Railroad Retirement Board* v. *Alton R. R. Co.*, supra, Mr. Justice Roberts uses the following language:

"The Federal Government is one of enumerated powers; those not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States or to the people. The Constitution is not a statute, but the supreme law of the land to which all statutes must conform, and the powers conferred upon the Federal Government are to be reasonably and fairly construed, with a view to effectuating their purposes. But recognition of this principle cannot justify attempted exercise of a power clearly beyond the true purpose of the grant."

In *Schechter* v. *United States* (295 U. S. 495, 79 L. Ed. 1570), Chief Justice Hughes restates this fundamental principle:

"First. Two preliminary points are stressed by the Government with respect to the appropriate approach to the important questions presented. We are told that the provision of the statute authorizing the adoption of codes must be viewed in the light of the grave national crisis with which Congress was confronted Undoubtedly, the conditions to which power is addressed are always to be considered when the exercise of power is challenged. Extraordinary conditions may call for extraordinary remedies. But the argument necessarily stops short of an attempt to justify action which lies outside the sphere of constitutional authority. Extraordinary conditions do not create or enlarge constitutional power. The Constitution established a national government with powers deemed to be adequate, as they have proved to be both in war and peace, but these powers of the National Government are limited by the constitutional grants. Those who act under these grants are not at liberty to transcend the imposed limits because they believe that more or different power is necessary. Such assertions of extra-constitutional authority were anticipated and precluded by the explicit terms of the Tenth Amendment. 'The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.' "

In *Carter* v. *Carter Coal Co.*, supra, the Supreme Court, speaking through Mr. Justice Sutherland, reaffirms these truths:

"The proposition, often advanced and as often discredited, that the power of the Federal Government inherently extends to purposes affecting the Nation as a whole with which the States severally cannot deal or cannot adequately deal, and the related notion that Congress, entirely apart from those powers delegated by the Constitution, may enact laws to promote the general welfare, have never been accepted but always definitely rejected by this court. Mr. Justice Story, as early as 1816, laid down the cardinal rule, which has ever since been followed—that the general government 'can claim no powers which are not granted to it by the Constitution, and the powers actually granted, must be such as are expressly given, or given by necessary implication' *Martin* v. *Hunter* (1 Wheat. 304, 326, 4 L. Ed. 97, 102). In the framers convention, the proposal to confer a general power akin to that just discussed was included in Mr. Randolph's resolutions, the sixth of which, among other things, declared that the National Legislature ought to enjoy the legislative rights vested in Congress by the Confederation, and 'moreover to legislate in all cases to which the separate States are incompetent, or in which the harmony of the United States may be interrupted by the exercise of individual legislation.' The Convention, however, declined to confer upon Congress power in such general terms; instead of which it carefully limited the powers which it thought wise to entrust to Congress by specifying them, thereby denying all others not granted expressly or by necessary implication. It made no grant of authority to Congress to legislate substantively for the general welfare, *United States* v. *Butler*, supra (297 U. S. p. 64, ante, 487, 56 S. Ct. 312, 102 A. L. R. 914); and no such authority exists, save as the general welfare may be promoted by the exercise of the powers which are granted."

Keeping before us, therefore, the constitutional principles announced by these cases, we return, to the original question—Is H. R. 7372 violative of the Constitution of the United States?

There are two propositions involved, both affirmatively urged in the findings and declaration of policy of the bill. First, can the bill be supported under the "national defense" theory? Second, can it be supported under the "commerce" theory?

H. R. 7372 CANNOT BE SUSTAINED UNDER THE NATIONAL DEFENSE THEAORY

Section 8 (1) of article I of the Federal Constitution provides as follows:

"The Congress shall have power to lay and collect taxes, duties, imposts and excises, to pay the debts and provide for the common defense and general welfare of the United States; but all duties, imposts, and excises shall be uniform throughout the United States":

Only in the above-quoted section is there found any grant of power to Congress to legislate for the national defense. Therefore, applying the principles heretofore announced, the power of Congress to enact legislation providing for the national defense is limited and governed by this clause and any act of Congress with reference thereto must be measured and tested by this provisions.

What then does section 8 (1) mean? And what are the limitations imposed by the language thereof? The people, in adopting this clause, granted to Congress the power only to lay and collect taxes for the purpose of providing for the common defense and general welfare of the United States. The right to tax is the power granted, and even thus must be restricted to the payment of debts and provision for the common defense and general welfare (as distinguished from individual or group defense and welfare).

Such is the construction placed on this clause by the framers of the Constitution itself and it has been reaffirmed for 150 years by our greatest jurists and by the Supreme Court of the United States. It must be accepted as the settled law of the land.

The following authorities should satisfy the most exacting:

In answer to the objection that the power contained in section 8 (1) of article I of the Constitution amounted to an unlimited commission to exercise every power which may be alleged to be necessary for the common defense, Madison, in the Federalist, No. XLI, page 135, said:

"Had no other enumeration or definition of the powers of the Congress been found in the Constitution than the general expressions just cited the authors of the objection might have had some color for it; though it would have been difficult to find a reason for so awkward a form of describing an authority to legislate in all possible cases. A power to destroy the freedom of the press, the trial by jury, or even to regulate the course of descents, or the forms of conveyances, must be very singularly expressed by the terms "to raise money for the general welfare." But what color can the objection have, when a specification of the objects alluded to by these general terms immediately follows, and is not even separated by a longer pause than a semicolon? If the different parts of the same instrument ought to be so expounded as to give meaning to every part which will bear it, shall one part of the same sentence be excluded altogether from a share in the meaning; and shall the more doubtful and indefinite terms be retained in their full extent, and the clear and precise expressions be denied any signification whatsoever? For what purpose could the enumeration of particular powers be inserted, if these and all others were meant to be included in the preceding general power? Nothing is more natural nor common than first to use a general phrase, and then to explain and qualify it by a recital of particulars. But the idea of an enumeration of particulars which neither explain nor qualify the general meaning, and can have no other effect than to confound and mislead, is an absurdity, which, as we are reduced to the dilemma of charging either on the authors of the objection or on the authors of the Constitution, we must take the liberty of supposing, had not its origin with the latter."

The classic exposition of this prlnciple by Judge Story is set forth in the opinion in *United States* v. *Boyer* (85 Fed. 425), and is as follows:

"Before proceeding to consider the nature and extent of the power conferred by this clause, and the reasons on which it is founded, it seems necessary to settle the grammatical construction of the clause, and to ascertain its true reading. Do the words 'to lay and collect taxes, duties, imposts, and excises' constitute a distinct, substantial power; and the words 'to pay the debts and provide for the common defense and general welfare of the United States' constitute another distinct and substantial power? Or are the latter words connected with the former, so as to constitute a qualification upon them? This has been a topic of political controversy, and has furnished abundant materials for popular declamation and alarm. If the former be the true interpretation, then it is obvious that, under color of the generality of the words 'and provide for the common defense and general welfare,' the Government of the United States is, in reality, a government of general and unlimited powers, notwithstanding the subsequent enumeration of specific powers. If the latter be the true construction, then the power of taxation only is given by the clause, and it is limited to objects of a national character, 'to pay the debts and provide for the common defense and the general welfare.' The former opinion has been maintained by some minds of great ingenuity and liberality of views. The latter has been the generally received sense of the Nation, and seems supported by reasoning at once solid and impregnable. The reading, therefore, which will be maintained in these commentaries, is that which makes the latter words a qualification of the former; and this will be best illustrated by supplying the words which are necessarily to be understood in this interpretation. They will then stand thus: 'The Congress shall have power to lay and collect taxes, duties, imposes, and excises, in order to pay the debts, and to provide for the common defense and general welfare of the United States'; that is, for the purpose of paying the public debts, and providing for the common defense and general welfare of the United States. In this sense, Congress has not an unlimited power of taxation; but it is limited to specific objects—the payment of the public debts, and providing for the common defense and general welfare. A tax, therefore, laid by Congress for neither of these objects, would be unconstitutional, as an excess of its legislative authority."

Finally, in *United States* v. *Butler* (297 U. S. 1, 80 L. Ed. 477), supra, (1935) (the Agricultural Adjustment Act case), Mr. Justice Roberts says:

"The clause thought to authorize the legislation—the first—confers upon the Congress power 'to lay and collect taxes, duties, imposts and excises, to pay the debts and provide for the common defense and general welfare of the United States * * *' It is not contended that this provision grants power to regulate agricultural production upon the theory that such legislation would promote the general welfare. The Government concedes that the phrase 'to provide for the general welfare' qualifies the power to lay and collect taxes. The view that the clause grants power to provide for the general welfare, independently of the taxing power, has never been authoritatively accepted. Mr. Justice Story points out that if it were adopted 'it is obvious that under color of the generality of the words, to "provide for the common defense and general welfare," the Government of the United States is, in reality, a government of general and unlimited powers, notwithstanding the subsequent enumeration of specific powers.' The true construction undoubtedly is that the only thing granted is the power to tax for the purpose of providing funds for payment of the Nation's debts and making provision for the general welfare."

(As the opinion states, the Government conceded the principle and the dissent by Mr. Justice Stone recognizes its validity. The dissent is on other grounds.)

Now what of H. R. 7372, the Cole bill? Does this bill provide for the laying and collection of taxes, duties, imposts, and excises for the purpose of providing funds for the common defense? It does not. The bill in no manner brings into operation the taxing power of Congress; on the contrary, it just boldly purports to regulate the production of petroleum. Testing the bill, therefore, by the language of section 8 (1), as interpreted and defined by the framers of the Constitution itself and by our United States courts, we must conclude that it cannot be sustained under the "national defense" theory. Congress does not have the power to enact the provisions contained in H. R. 7372 under authority of section 8 (1), article I of the Constitution of the United States.

Surely the framers of H. R. 7372 failed to consider the constitutional questions involved or we must conclude that they belong to that class of persons in this country which seeks to govern by "extra-constitutional" means.

We now turn to proposition two: Can H. R. 7372 be sustained under the "commerce" theory?

H. R. 7372 Cannot Be Sustained Under the Commerce Theory

Section 8 (3) of article I of the Federal Constitution provides as follows:

"The Congress shall have power to regulate commerce with foreign nations, and among the several States, and with the Indian tribes."

This quoted clause contains the sole grant of power to Congress to legislate concerning commerce. Any congressional legislation with reference to commerce, therefore, must also be tested and measured by this clause.

What of H. R. 7372? Section 8 (3) of article I grants to Congress the right to regulate commerce with foreign nations and among the several States. There is no language granting the right to control or regulate production. Does this proposed act—the Cole bill—contain any provisions providing for regulation of commerce among the several States or with foreign nations?

It is obvious that it does not. An analysis of the bill discloses two things—and this is of fundamental importance, the recognition of which will save much loose and confused thinking and the acceptance of which must of necessity answer the question under consideration.

First, exclusive of the findings and declaration of policy in section 2 (which as heretofore explained, adds nothing to its constitutionality), and section 19, a penal section, the word "commerce" nowhere appears in the bill. And of section 10 (a) is excluded (the section dealing with research and experimentation and is not, therefore, a regulation section), not a single word denoting "commerce" is found. We look in vain for such words as "seller," "buyer," "price," "carry," "transportation," "exhange," "trade", "traffic", "movement." Nor is there any combination of words suggesting commerce. The subject matter is not commerce nor "in" commerce. In truth, even a cursory examination of the bill reveals that it does not concern nor relate to commerce.

The second fact is that H. R. 7372 seeks to regulate the production of petroleum. It is the bringing of the petroleum out of the ground that is being regulated: the physical acts and processes governing the "recovery of petroleum" from "all fields within the United States." Section 3, the definition section, reveals this. The heading to section 5 is Investigation of Petroleum Production, and this and subsequent sections all relate to "the conditions of petroleum production." "Porosity," "permeability," "reservoir energy," "reservoir pressure," "well spacing," "well casing," "drilling practices," "water encroachment," gas-oil ratios—these are the words used in the bill and they all relate to "the conditions of petroleum production."

But production is not commerce. And if production is not commerce, production cannot be "commerce among the States."

The two concepts are essentially and fundamentally different. Being different, they cannot be the same. Not being the same, and the bill relating solely to production and not to commerce, it inevitably follows that Congress cannot regulate the production of petroleum in the respective States under the guise of the "commerce" theory and the provisions of H. R. 7372 embodying the same are unconstitutional and void.

The above distinctions are legally sound and are fully recognized and sustained by the authorities. Particularly, there are two classes of cases where "commerce" is distinguished from "production" (and "manufacture"). The one class is where the courts had under consideration the validity of State laws challenged as undue burdens on interstate commerce, and the other is where the courts had under consideration the validity of Federal laws claimed to be valid regulation of interstate commerce.

Some of the more important decisions by the United States Supreme Court construing State laws are the following: *Veazie* v. *Moore* (14 How. 568, 15 L. Ed. 545 (1852); *Coe* v. *Town of Errol* (116 U. S. 517, 29 L. Ed. 715 (1885)); *Kidd* v. *Pearson* (128 U. S. 1, 32 L. Ed. 346 (1888)); *Crescent Cotton Oil Co.* v. *State of Mississippi* (257 U. S. 129, 66 L. Ed. 166 (1921)); *Heisler* v. *Thomas Colliery* (260 U. S. 245, 67 L. Ed. 237 (1922)); *Oliver Iron Mining Co.* v. *Lord* (262 U. S. 172, 67 L. Ed. 929 (1922)); *Utah Power & Light Co.* v. *Pfost* (52 F. (2d) 226; affirmed on appeal, 286 U. S. 165, 76 L. Ed. 1038 (1931)); *Champlin Refining Co.* v. *Corporation Commission* (286 U. S. 210, 76 L. Ed. 1062 (1931)); *Chassanoil* v. *City of Greenwood* (291 U. S. 584, 78 L. Ed. 1004 (1933)); *Detroit International Bridge Co.* v. *Corporation Tax Appeal Board* (294 U. S. 83, 79 L. Ed. 777 (1934)); *Milk Control Board of Penn.* v. *Eisenberg Farm Products* (306 U. S. 346, 83 L. Ed. 752 (1938)).

In the *Veazie case*, supra, the Supreme Court had under consideration the question of whether or not a law of the State of Maine, granting the exclusive navigation of the upper Penobscot River, was in conflict with the commerce section of the Constitution. The Court held that the State statute was valid, as the rights granted were essentially local in their nature and extent. In considering the question involved, the Court uses the following language:

"Taking the term 'commerce' in its broadest acceptation, supposing it to embrace not merely traffic, but the means and vehicles by which it is prosecuted, can it properly be made to include objects and purposes such as those contemplated by the law under review? Commerce with foreign nations must signify commerce which in some sense is necessarily connected with these nations, transactions which either immediately or at some stage of their progress, must be extraterritorial. The phrase can never be applied to transactions wholly internal, between citizens of the same community, or to a polity and laws whose ends and purposes and operations are restricted to 'the territory and soil and jurisdiction of such community.' Nor can it be properly concluded, that, because the products of domestic enterprise in agriculture or manufactures, or in the arts, may ultimately become the subjects of foreign commerce, that the control of the means or the encouragements by which enterprise is fostered and protected, is legitimately within the import of the phrase 'foreign commerce,' or fairly implied in any investiture of the power to regulate such commeree. A pretension as far reaching as this, would extend to contracts between citizen and citizens of the same State, would control the pursuits of the planter, the graziers, the manufacturer, the mechanic, the immense operations of the collieries and mines and furnaces of the country; for there is not one of these avocations, the results of which may not become the subjects of foreign commerce, and be borne either by turnpikes, canals or railroads, from point to point within the several States, toward an ultimate destination, like the one above mentioned. Such a pretension would effectually prevent or paralyze every effort at internal improvement by the several States; for it cannot be supposed that the States would exhaust their capital and their credit in the construction of turnpikes, canals and railroads, the remuneration derivable from which, and all control over which, might be immediately wrested from them, because such public works would be facilities for a commerce which, whilst availing itself of those facilities, was unquestionably internal, although intermediately or ultimately it might become foreign."

In *Coe* v. *Town of Errol*, supra, the Supreme Court had under consideration the question of whether the assessment of a local tax by the town of Errol, N. H., upon logs cut in New Hampshire, designed for final shipment to Maine, was unconstitutional as being in violation of the commerce clause of the United States Constitution. The Court sustained the tax and in considering the distinction between intrastate and interstate commerce, uses the following language (p. 719):

"Certainly, as long as these products are on the lands which produce them, they are part of the general property of the State. And so we think they continue to be until they have entered upon their final journey for leaving the State and going into another State."

In *Kidd* v. *Pearson*, supra, the Supreme Court had under consideration the question of whether or not a law of the State of Iowa, authorizing the abating as a nuisance of a distillery making intoxicating liquors, was in conflict with the commerce clause of the Constitution of the United States. The Court sustained the act and held that it did not violate the commerce clause. In considering the subject of commerce, Justice Lamar, in writing the opinion for the Court, used the following language (p. 350):

"No distinction is more popular to the common mind, or more clearly expressed in economic and political literature, than that between manufacturers and commerce. Manufacture is transformation—the fashioning of raw materials into a change of form for use. The functions of commerce are different. The buying and selling and the transportation incidental thereto constitute commerce; and the regulation of commerce in the constitutional sense embraces the regulation at least of such transportation. The legal definition of the term as given by this Court in *County of Mobile* v. *Kimball*, (102 U. S. 691, 702), is as follows: 'Commerce with foreign nations and among the States, strictly considered, consists in intercourse and traffic, including in these terms navigation and the transportation and transit of persons and property, as well as the purchase, sale, and exchange of commodities.' If it be held that the term includes the regulation of all such manufactures as are intended to be the subject of commercial transactions in the future, it is impossible to deny that it would also include all productive industries that contemplate the same thing. The result would be that Congress would be invested, to the exclusion of the States, with the power to regulate, not only manufacture, but also agriculture, horticulture, stock raising, domestic fisheries, mining—in short, every branch of human industry. For is there one of them that does not contemplate, more or less clearly, an interstate or foreign market? Does not the wheat grower of the Northwest, and the cotton planter of the South, plant, cultivate, and harvest his crop with an eye on the prices at Liverpool, New York, and Chicago? The power being vested in Congress and denied to the States, it would follow as an inevitable result that the duty would devolve on Congress to regulate all of these delicate, multiform, and vital interests—interests which in their nature are, and must be, local in all the details of their successful management.

"It is not necessary to enlarge on, but only to suggest, the impracticability of such a scheme, when we regard the multitudinous affairs involved, and the almost infinite variety of their minute details.

"It was said by Chief Justice Marshall that it is a matter of public history that the object of vesting in Congress the power to regulate commerce with foreign nations and among the several States was to insure uniformity of regulation against conflicting and discriminating State legislation. See also *County of Mobile* v. *Kimball* supra (69 (26:240)).

"This being true, how can it further that object so to interpret the constitutional provision as to place upon Congress the obligation to exercise the supervisory powers just indicated? The demands of such a supervision would require, not uniform legislation generally applicable throughout the United States, but a swarm of statutes only locally applicable and utterly inconsistent. * * *

"A situation more paralyzing to the State governments, and more provocative of conflicts between the General Government and the States, and less likely to have been what the framers of the Constitution intended, it would be difficult to imagine."

In the *Crescent Cotton Oil Company case*, supra, in upholding a Mississippi statute placing restrictions upon the owners of cotton gins as not being in violation of the commerce clause, the Supreme Court held that ginning of cotton is manufacture and is not commerce.

In the *Heisler v. Thomas Colliery Company case*, the Supreme Court had under consideration the validity of a State tax on each ton of anthracite coal mined, washed, or screened or otherwise prepared for the market. Those opposing the tax objected that Pennsylvania had a virtual monopoly of the anthracite coal and, therefore, the tax constituted an interference with commerce prohibited by the United States Constitution. The Court, through Mr. Justice McKenna, in repudiating this contention, uses the following language (p. 243):

"We may, therefore, disregard the adventitious considerations referred to and their confusion, and, by doing so, we can estimate the contention made. It is that the products of a State that have, or are destined to have, a market in other States, are subjects of interstate commerce, though they have not moved from the place of their production or preparation.

"The reach and consequences of the contention repel its acceptance. If the possibility, or indeed, certainty, of exportation of a product or article from a State, determines it to be in interstate commerce before the commencement of its movement from the State, it would seem to follow that it is in such commerce from the instant of its growth or production; and in the case of coals, as they lie in the ground. The result would be curious. It would nationalize all industries; it would nationalize and withdraw from State jurisdiction and deliver to Federal commercial control the fruits of California and the South, the wheat of the West and its meats, the cotton of the South, the shoes of Massachusetts, and the woolen industries of other States at the very inception of their production or growth; that is, the fruits unpicked, the cotton and wheat ungathered, hides and flesh of cattle yet "on the hoof," wool yet unshorn, and coal yet unmined, because they are, in varying percentages, destined for and surely to be exported to States other than those of their production."

In *Oliver Iron Mining Company* v. *Lord*, supra, the Court, in passing upon the constitutionality of a Minnesota statute imposing a tax upon the business of mining iron ore, in which it was sought to evade the tax on the ground that the tax was an interference with commerce and, therefore, in violation of the commerce clause, used the following language (p. 935, 936):

"Plainly the facts do not support the contention. Mining is not interstate commerce, but, like manufacturing is a local business, subject to local regulation and taxation. * * * Its character in this regard is intrinsic, is not affected by the intended use or disposal of the product, is not controlled by contractual engagements, and persists even though the business be conducted in close connection with interstate commerce. * * *

"The ore does not enter interstate commerce until after the mining is done, and the tax is imposed only in respect of the mining. No discrimination against interstate commerce is involved. The tax may indirectly and incidentally affect such commerce, just as any taxation of railroad and telegraph lines does, but this is not a forbidden burden or interference."

The *Utah Power & Light Co.* v. *Pfost cases*, supra, involve the right of the State to tax electricity generated in the State but transmitted to interstate lines for use in other States. Both the circuit court and the Supreme Court of the United States sustained the tax and held that the "process of generation" was not commerce.

The circuit court (p. 234) used the following language:

"There is a distinction between production and commerce as commerce succeeds production and is not part of it. Production or manufacture is a transformation of raw material into a change of form for use, while the functions of commerce consists in the purchasing, selling, and exchanging of commodities and the transportation incidental thereto."

The Supreme Court (p. 1047) uses similar language:

"We are satisfied upon a consideration of the whole case, that the process of generation is as essentially local as though electrical energy were a physical thing, and to that situation we must apply, as controlling, the general rule that commerce does not begin until manufacture is finished, and hence the commerce clause of the Constitution does not prevent the state from exercising exclusive control over the manufacture. *Cornell* v. *Coyne* (192 U. S. 418, 429, 48 L. Ed. 504, 508, 509, 24 S. Ct. 383). 'Commerce succeeds to manufacture, and is not a part of it.' *United States* v. *E. C. Knight Co.* (156 U. S. 1, 12, 39 L. Ed. 352, 329, 15 S. Ct. 249).

"Without regard to the apparent continuity of the movement, appellant, in effect, is engaged in two activities, not in one only. So far as it produces electrical energy in Idaho, its business is purely intrastate, subject to State taxation and control. In transmitting the product across the State line into Utah, appellant is engaged in interstate commerce, and State legislation in respect thereof is subject to the paramount authority of the commerce clause of the Federal Constitution."

In the *Champlin Refining Company case*, supra, the Court had under consideration the validity of the proration laws of the State of Oklahoma. The Champlin Co. was engaged in a general oil business. It sought to enjoin the Oklahoma Corporation Commission (and others) from enforcing certain provisions of the proration statute and regulations thereunder on the ground that they were repugnant to the commerce clause of the United States Constitution. The Court, speaking through Mr. Justice Butler, said on this point (p. 1078):

"Plaintiff contends that the act and proration orders operate to burden interstate commerce in crude oil and its products in violation of the commerce clause. It is clear that the regulations prescribed and authorized by the act and the proration established by the commission apply only to production and not to sales or transportation of crude oil or its products. Such production is essentially a mining operation and therefore is not a part of interstate commerce even though the product obtained is intended to be and in fact is immediately shipped in such commerce. * * * No violation of the commerce clause is shown."

In *Chassaniol* v. *City of Greenwood*, supra, the Supreme Court upheld a license tax imposed by the city of Greenwood, Miss., upon every person engaged in the business of buying or selling cotton, holding that the same did not contravene the commerce clause of the United States Constitution. Mr. Justice Brandeis (p. 1006) used the following language:

"Chassaniol contends that all the cotton is in interstate or foreign commerce from the moment it leaves the gin for Greenwood, or at least from the moment it is purchased at Greenwood by the buyer. The argument is that already at that time the cotton is destined for ultimate shipment to some other State or country; and that to tax the occupation of the cotton buyer burdens interstate commerce, since the buyer at Greenwood is the instrumentality by which the interstate transaction is initiated. The business involved is substantially like that described in *Federal Compress & Warehouse Co.* v. *McLean;* and the rule there declared must govern here. Ginning cotton, transporting it to Greenwood, and warehousing, buying, and compressing it there, are each, like the growing of it, steps in preparation for the sale and shipment in interstate or foreign commerce. But each step prior to the sale and shipment is a transaction local to Mississippi, a transaction in intrastate commerce. Hence those engaged in performing any such local function may be subjected to an occupation tax, just as the property used, or processed by them may be subjected to a property tax."

In the *Detroit International Bridge Co. case*, supra, the Supreme Court held that the ownership, maintenance, and operation of an international bridge did not constitute interstate commerce.

In the *Milk Control Board case*, supra, the Supreme Court, speaking through Mr. Justice Roberts, held that a Pennsylvania statute requiring licenses from milk dealers and fixing a minimum price to be paid producers was not in conflict with the commerce clause. The Court says:

"The respondent maintains a receiving station in Pennsylvania where it conducts the local business of buying milk. At that station the neighboring farmers deliver their milk. The activity affected by the regulation is essentially local in Pennsylvania. Upon the completion of that transaction the respondent engages in conserving and transporting its own property."

Thus we see an unbroken line of United States Supreme Court decisions, extending from early times down into 1938, and dealing with the validity of local laws, clearly distinguishing between production and manufacture on the one hand and commerce on the other, and holding that production and manufacturing are not commerce and not "in" commerce and, therefore, such local laws are not in violation of the commerce clause of the Federal Constitution.

Let us next examine the decisions where the constitutionality of certain acts of Congress were questioned under the commerce clause. Some of the important ones are the following:

United States district court: *U. S.* v. *Boyer* (85 Fed. 425, W. D. Mo. (1898)); *Acme, Inc.* v. *Besson* (10 F. Supp. 1, N. J. (1935)); *Bebelein, Inc.* v. *Milbourne* (12 F. Supp. 105, E. D. La. (1935)); *U. S.* v. *Eason Oil Co.* (8 F. Supp. 365, W. D. Okla. (1934)).

United States Supreme Court: *U. S.* v. *DeWitt* (9 Wallace 41, 19 L. Ed. 593 (1869)); *U. S.* v. *E. C. Knight Co.* (156 U. S. 1, 39 L. Ed. 325 (1894)); *Delaware, L. & W. R. Co.* v. *Yurkonis* (238 U. S. 439, 59 L. Ed. 1397 (1914)); *Hammer* v. *Dagenhart* (247 U. S. 251, 62 L. Ed. 1101 (1917)); *United Mine Workers of America* v. *Coronado Coal Co.* (259 U. S. 344, 66 L. Ed. 975 (1921)); *United Leather Workers International Union* v. *Herkert & Misel Trunk Co.* (265 U. S. 457, 68 L. Ed. 1104 (1923)); *Schechter* v. *U. S.* (295 U. S. 495, 79 L. Ed. 1570 (1935)); *U. S.* v. *Butler* (297 U. S. 1, 80 L. Ed. 477 (1935)); *Carter* v. *Carter Coal Co.* (298 U. S. 238, 80 L. Ed. 1160 (1935)).

In *U. S.* v. *Boyer*, supra, the court had under consideration the constitutionality of an act of Congress purporting to grant the Secretary of Agriculture power to appoint inspectors at packing houses engaged in slaughtering cattle intended for interstate and foreign markets. The court held in a well-reasoned opinion that packing houses, slaughtering cattle for interstate and export trade, were not engaged in interstate commerce. In the course of the opinion the following language appears (p. 432):

"What is commerce? Is it manufacturing? Is it slaughtering cattle and sheep and hogs? If so, why is not farming, or stock raising, or manufacturing lumber, or mining? For all these enter into commerce, both domestic and foreign, and are intended for both."

In *Acme, Inc.* v. *Besson*, supra, the plaintiff sought an injunction to restrain the United States Attorney from prosecuting any proceeding against it for alleged violation of the Industrial Recovery Act governing metal products manufactured. In holding the act was unconstitutional, the court distinguishes between commerce and manufacture and accepts the definition contained in *Kidd* v. *Pearson:*

"Manufacture is transformation—the fashioning of raw materials into a change of form for use. The functions of commerce are different. The buying and selling and the transportation thereto constitute commerce."

In *Gebelein, Inc.* v. *Milbourne*, supra, in a case involving the validity of the processing tax on hogs under the Agricultural Adjustment Act, the court says (p. 114):

"It seems entirely clear, therefore, that control of production within the States is a power not exercisable by the Federal Government under the interstate commerce power, but is reserved to the States under the tenth amendment."

Next is the case of *U. S.* v. *Eason Oil Co.*, supra (we have placed this case out of its regular order, because of its supreme importance), arising in the western district of Oklahoma, wherein the United States under the National Industrial Recovery Act sought to enjoin the oil company from drilling on a 10-acre tract of land in Oklahoma, the code under the act prescribing one well to each 40 acres. The opinion, by Judge Vaught, denying relief to the Government, is remarkable for its clarity and extensive collation and discussion of authorities on the question here involved. The Judge follows the distinctions between production and commerce and holds that the Federal Government has no constitutional right to restrain the drilling of an oil well within the boundaries of the respective States. The Judge concludes his opinion with the following (p. 378):

"I fully appreciate the fact that it is a delicate matter for a court to question the constitutionality of an act of an officer of the Government, particularly at a time like this; but 'the Constitution of the United States is a law for rulers and people,' and there is no higher obligation resting upon an American citizen than the obligation to support and defend the Constitution. It is the fundamental law of our land. Its maintenance is necessary to the protection of our property rights and the preservation of our personal liberties. If the construction be placed on the Constitution which the Government seeks to have placed on it in this case, all commerce is interstate commerce, and that which the Supreme Court has held not to be commerce will be interstate commerce, and every act of a citizen, regardless of its connection with interstate commerce, is subject to the control of the Federal Government. The fidelity with which the people in the early days of our Nation's history fought to preserve the rights of the State, which rights have been protected with jealous care all these years, will go for naught. If Congress can regulate and control the production of oil and gas wholly within the State, it can regulate and control any other private intrastate business, and the rights of the State heretofore recognized by the Constitution and by our highest court will be entirely destroyed. Executive orders will know no constitutional limitations. If this threatened impairment of the Constitution should continue and be held to be within the powers of Congress, there will be little resemblance between the weakened instrument and that which our fathers termed with pride our fundamental law. I am not unmindful there are many splendid provisions in the code and that they might be productive of excellent results, but the performance of these functions in matters purely intrastate is not within the power of the Federal Government. Congress might be able to provide a better government for our States and municipalities than that now in force, but it is not within its power to do so. For it to attempt to do so is to usurp a power which it does not have. If the people of this Nation desire to give Congress additional power, provision is made in the Constitution (article 5) for its amendment; but, until such amendment shall have been made in a constitutional manner, the duty of the courts to support and defend the Constitution as now written and as construed by our highest court is mandatory."

Turning now to the opinions of the United States Supreme Court, we consider first the case of *U. S.* v. *De Witt*, supra. The case arose upon an indictment against the defendant for selling illuminating oil containing specifications contrary to a Federal statute. The question certified to the Supreme Court was: "Has Congress power under the Constitution, to prohibit trade within the limits of a State?" While the case is not exactly in point on the question of the distinction between production and manufacturing on the one hand and commerce on the other, yet the case is important because the Court does hold that within State limits, Congress has no constitutional right to legislate with respect to such matters.

The analogy is evident. If Congress could not prohibit the sale of oil, made of certain specifications, it certainly cannot legislate concerning the conditions of drilling and producing oil in a given State.

In *U. S.* v. *Knight Company*, supra, the United States sought to cancel, as unlawful agreements contrary to an act of Congress, contracts between the defendants relating to the purchase of certain Philadelphia sugar refineries and the business of sugar refining in Pennsylvania. The Government contended that a monopoly in sugar refining resulted therefrom and, therefore, should be suppressed under the commerce clause. In an opinion by Mr. Justice Fuller, the Court held that the purchase of the Pennsylvania refineries and the intent to manufacture sugar bore no direct relation to commerce. The Court says (p. 329):

"Doubtless the power to control the manufacture of a given thing involves in a certain sense the control of its disposition, but this is a secondary and not the primary sense; and although the exercise of that power may result in bringing the operation of commerce into play, it does not control it, and affects it only incidentally and indirectly. Commerce succeeds to manufacture, and is not a part of it."

In *Delaware L. & W. R. Co.* v. *Yurkonis*, supra, the Court held that an injury occurring when the plaintiff was preparing to mine coal in Pennsylvania was not an injury arising in interstate commerce. In other words, the mining of coal is not commerce.

In *Hammer* v. *Dagenhart*, supra, the constitutionality of a Federal child labor statute was involved. The Court, in holding that the act could not be sustained under the commerce clause of the Constitution, distinguishes between mining and manufacturing on the one hand and commerce on the other, using the following language (p. 1105):

"This element is wanting in the present case. The thing intended to be accomplished by this statute is the denial of the facilities of interstate commerce to those manufacturers in the States who employ children within the prohibited ages. The act in its effect does not regulate transportation among the States, but aims to standardize the ages at which children may be employed in mining and manufacturing within the States. The goods shipped are of themselves harmless. The act permits them to be freely shipped after 30 days from the time of their removal from the factory. When offered for shipment, and before transportation begins, the labor of their production is over, and the mere fact that they were intended for interstate commerce transportation does not make their production subject to Federal control under the commerce power.

"'Commerce' consists of intercourse and traffic '* * * and includes the transportation of persons and property, as well as the purchase, sale, and exchange of commodities.' The making of goods and the mining of coal are not commerce, nor does the fact that these things are to be afterward shipped, or used in interstate commerce, make their production a part thereof."

In *United Mine Workers of America* v. *Coronado Coal Co.*, supra, the coal company sought to recover from the union damages under the Sherman Antitrust Act on the theory that obstruction of coal mining was a direct obstruction of interstate commerce in coal. In the opinion—by Chief Justice Taft—the following language appears (p. 994):

"Coal mining is not interstate commerce, and the power of Congress does not extend to its regulation as such. In *Hammer* v. *Dagenhart* (247 U. S. 251, 272; 62 L. Ed. 1101, 1106; 3 A. L. R. 649; 38 Sup. Ct. Rep. 529; Ann. Cas. 1918 E, 724), we said: 'The making of goods and the mining of coal are not commerce, nor does the fact that these things are to be afterward shipped or used in interstate commerce make their production a part thereof.' *Delaware, L. & W. R. Co.* v. *Yurkonis* (238 U. S. 439, 59 L. Ed. 1397, 35 S. Ct. Rep. 91)."

The doctrine announced in the *Coronado Coal Company case*, supra, is reaffirmed by the Court in *United Leather Workers International Union* v. *Herkert & Misel Trunk Company*, supra.

We now come to the three important decisions wherein the National Industrial Recovery Act, the Agricultural Adjustment Act, and the Guffey Coal Act were declared unconstitutional by our Supreme Court.

The first of these is *Schechter* v. *U. S.*, supra. The opinion is by Chief Justice Hughes, with a concurring opinion by Justice Cardozo. There was no dissent. The Schechters were convicted of violating certain provisions of an Industrial Code of Fair Competition adopted under the National Industrial Recovery Act. In reversing the conviction and holding that the act was unconstitutional, the Court considered the validity of the codes under the commerce clause and said (p. 1587):

"(1) Were these transactions 'in' interstate commerce? Much is made of the fact that almost all the poultry coming to New York is sent there from other States. But the code provisions, as here applied, do not concern the transportation of the poultry from other States to New York, or the transactions of the commission men or others to whom it is consigned, or the sales made by such consignees to defendants. When defendants had made their purchases, whether at the West Washington Market in New York City or at the railroad terminals serving the city, or elsewhere, the poultry was trucked to their slaughterhouses in Brooklyn for local disposition. The interstate transactions in relation to that poultry then ended. Defendants held the poultry at their slaughterhouse markets for slaughter and local sale to retail dealers and butchers, who in turn sold directly to consumers. Neither the slaughtering nor the sales by defendants were transactions in interstate commerce."

The second case is *U. S.* v. *Butler*, supra, wherein the Court had under consideration the constitutionality of the Agricultural Adjustment Act. This case is important for two reasons: First, because the Government (Mr. Reed arguing, then Solicitor General and now a member of the Court) did not even attempt to uphold the validity of the act under the commerce clause (p. 487) thus recognizing that "production" was not "commerce," and, second, because the Court unequivocally asserts that the act is one regulating agricultural production and that Congress has no powers to regulate agricultural production. The opinion is by Mr. Justice Roberts.

On the first point, the Court says (p. 487):

"Article I, section 8, of the Constitution vests sundry powers in the Congress. But two of its clauses have any bearing upon the validity of the statute under review.

"The third clause endows the Congress with power to regulate Commerce * * * among the several States. Despite a reference in its first section to a burden upon, and an obstruction of the normal currents of commerce, the act under review does not purport to regulate transactions in interstate or foreign commerce. Its stated purpose is the control of agricultural production, a purely local activity, in an effort to raise the prices paid the farmer. Indeed, the Government does not attempt to uphold the validity of the act on the basis of the commerce clause, which for the purpose of the present case, may be put aside as irrelevant."

On the second point, the Court says (p. 489):

"We are not now required to ascertain the scope of the phrase 'general welfare of the United States' or to determine whether an appropriation in aid of agriculture falls within it. Wholly apart from that question, another principle embedded in our Constitution prohibits the enforcement of the Agricultural Adjustment Act. The act invades the reserved rights of the States. It is a statutory plan to regulate and control agricultural production, a matter beyond the powers delegated to the Federal Government. The tax, the appropriation of the funds raised, and the direction for their disbursement, are but parts of the plan. They are but means to an unconstitutional end.

"From the accepted doctrine that the United States is a government of delegated powers, it follows that those not expressly granted, or reasonably to be implied from such as are conferred, are reserved to the States or to the people. To forestall any suggestion to the contrary, the tenth amendment was adopted. The same proposition, otherwise stated, is that powers not granted are prohibited. None to regulate agricultural production is given, and therefore legislation by Congress for that purpose is forbidden.

"It is an established principle that the attainment of a prohibited end may not be accomplished under the pretext of the exertion of powers which are granted."

The last of this trinity of cases is *Carter* v. *Carter Coal Company*, supra, wherein the Court struck down the so-called Guffey coal bill. The act was designated "Bituminous Coal Conservation Act of 1935" (please note that H. R. 7372 is designated "Petroleum Conservation Act of 1939") and purports to regulate the bituminous coal industry. The Government sought, among other things, to support the constitutionality of the act under the commerce clause. The Court's consideration of this question begins with the following language (p. 1131):

"Since the validity of the act depends upon whether it is a regulation of interstate commerce, the nature and extent of the power conferred upon Congress by the commerce clause becomes the determinative question in this branch of the case. The commerce clause vests in Congress the power—'To regulate Commerce with foreign nations, and among the several States, and with the Indian Tribes.' The function to be exercised is that of regulation. The thing to be regulated is the commerce described. In exercising the authority conferred by this clause of the Constitution, Congress is powerless to regulate anything which is not commerce, as it is powerless to do anything about commerce which is not regulation. We first inquire, then-- What is commerce?"

Thereafter, the Court considers the distinction between commerce on the one hand and production and manufacture on the other, analyzes a number of cases and quotes therefrom, and holds that mining is not commerce. The following appears in the opinion (pp. 1184, 1185):

"The same rule applies to the production of oil.

"Such production is essentially a mining operation and therefore is not a part of interstate commerce even though the product obtained is intended to be and in fact is immediately shipped in such commerce." *Champlin Ref. Co.* v. *Corporation Commission* (286 U. S. 210, 235, 76 L. Ed. 1062, 1078, 52 S. Ct. 559, 86 A. L. R. 403). One who produces or manufactures a commodity, subsequently sold and shipped by him in interstate commerce, whether such sale and shipment were originally intended or not, has engaged in two distinct and separate activities. So far as he produces or manufactures a commodity, his business is purely local. So far as he sells and ships, or contracts to sell and ship, the commodity to customers in another State, he engages in interstate commerce. In respect of the former, he is subject only to regulation by the State; in respect of the latter, to regulation only by the Federal Government. *Utah Power & L. Co.* v. *Pfost* (286 U. S. 165, 182, 76 L. Ed. 1038, 1047, 52 S. Ct. 548). Production is not commerce; but a step in preparation for commerce. *Chassaniol* v. *Greenwood* (291 U. S. 584, 587, 78 L. Ed. 1004, 1006, 54 S. Ct. 541).

"We have seen that the word 'commerce' is the equivalent of the phrase 'intercourse for the purpose of trade.' Plainly, the incidents leading up to and culminating in the mining of coal do not constitute such intercourse. The employment of men, the fixing of their wages, hours of labor, and working conditions, the bargaining in respect of these things—whether carried on separately or collectively—each and all constitute intercourse for the purposes of production, not of trade. The latter is a thing apart from the relation of employer and employee, which in all producing occupations is purely local in character. Extraction of coal from the mine is the aim and the completed result of local activities. Commerce in the coal mined is not brought into being by force of these activities, but by negotiations, agreements, and circumstances entirely apart from production. Mining brings the subject matter of commerce into existence. Commerce disposes of it.

"A consideration of the foregoing, and of many cases which might be added to those already cited, renders inescapable the conclusion that the effect of the labor provisions of the act, including those in respect of minimum wages, wage agreements, collective bargaining, and the Labor Board and its powers, primarily falls upon production and not upon commerce; and confirms the further resulting conclusions that production is a purely local activity. It follows that none of these essential antecedents of production constitutes a transaction in or forms any part of interstate commerce. *A. L. A. Schechter Poultry Corp.* v. *United States*, supra (295 U. S. 542 et seq., 79 L. Ed. 1587, 55 S. Ct. 837, 97 A. L. R. 947). Everything which moves in interstate commerce has had a local origin. Without local production somewhere, interstate commerce, as now carried on, would practically disappear. Nevertheless, the local character of mining, of manufacturing, and of crop growing is a fact, and remains a fact, whatever may be done with the products."

As further authority herein, we cite the legal brief prepared by the Honorable Charles Evans Hughes, and filed by him with the Federal Oil Conservation Board at Washington on May 27, 1926, with respect to the rights of Congress to regulate the production of petroleum within the boundaries of the respective States. With reference to this right under the commerce clause, Mr. Hughes likewise differentiates between production and commerce and after reviewing some of the cases, holds that Congress does not have such power. In part the brief says:

"Petroleum lies beneath the surface of the earth. The territory now under consideration is a part of the domain of the State over which the State has sovereign jurisdiction and control except as the State power is limited by the Federal Constitution. Production is not commerce and the production of petroleum within a State is not interstate commerce. The case of petroleum, in this respect, appears to be the same as that of coal. As to coal, the Supreme Court of the United States, by Mr. Chief Justice Taft, said upon this point in the *United Mine Workers of America* v. *Coronado Coal Co.* (259 U. S. 407, 408):

" 'Coal mining is not interstate commerce, and the power of Congress does not extend to its regulation as such.' In *Hammer* v. *Dagenhart* (247 U. S. 251, 272), we said: 'The making of goods and the mining of coal are not commerce, nor does the fact that these things are to be afterwards shipped or used in interstate commerce make their production a part thereof. *Delaware, L. & W. R. Co.* v. *Yurkonis*, (238 U. S. 439).' Obstruction to coal mining is not a direct obstruction to interstate commerce in coal, although it, of course, may affect it by reducing the amount to coal to be carried in that commerce.

"Again, it was said by the Supreme Court of the United States in *Oliver Iron Mining Co.* v. *Lord* (262 U. S. 171, 176):

" 'Mining is not interstate commerce, but like manufacturing is a local business, subject to local regulation and taxation. *Kidd* v. *Pearson* (128 U. S. 1, 20); *Capital City Dairy Co.* v. *Ohio* (183 U. S. 238, 245); *Delaware, L. & W. R. Co.* v. *Yurkonis* (238 U. S. 439, 444); *Hammer* v. *Dagenhart* (247 U. S. 251, 272); *United Mine Workers* v. *Coronado Coal Co.* (259 U. S. 344, 410). Its character in this regard is intrinsic, is not affected by the intended use or disposal of the product, is not controlled by contractual engagements, and persists even though the business be conducted in close connection with interstate commerce. *Cornell* v. *Coyne* (192 U. S. 418); *Browning* v. *Waycross* (233 U. S. 16, 22); *Delaware, L. & W. R. Co.* v. *Yurkonis* (238 U. S. 439, 444); *General R. Signal Co.* v. *Virginia* (246 U. S. 500); *Hammer* v. *Dagenhart* (247 U. S. 251, 272); *Arkadelphia Mill Co.* v. *St. Louis Southwestern R. Co.* (249 U. S. 134, 151); *Crescent Cotton Oil Co.* v. *Mississippi* (257 U. S. 129, 136); *Reisler* v. *Thomas Colliery Co.* (260 U. S. 245).

" 'The ore does not enter interstate commerce until after the mining is done * * *.'

"See also, *United Leather Workers International Union* v. *Herkert & Meisel Trunk Co.* (265 U. S. 457, 464, 465).

* * * * * * *

"It may therefore be safely taken for granted that, under the power to regulate commerce, Congress has no constitutional authority to control the mere production of petroleum on lands (other than Indian lands) within the territory of a State. All plans for requiring unit operation or otherwise, which involve the assertion of such an authority on the part of Congress, do not require discussion. They proceed from an utterly erroneous conception of Federal power. It does not further the policy of conservation to take up the public attention with futile proposals which disregard the essential principles of our system of government."

This long list of eminent authorities and the clear and logical analyses made by the courts and their forceful restatement of the constitutional principles involved can leave no doubt as to the unconstitutionality of H. R. 7372. It cannot be sustained under the commerce clause of the Federal Constitution.

The foregoing fundamental principles of constitutional law, which must govern us in our consideration of the constitutionality of H. R. 7372, find no contradiction in the National Labor Relations Board cases—*National Labor Relations Board* v. *Jones & Laughlin Steel Corporation* (301 U. S. 1, 81 L. Ed. 893); *Santa Cruz Fruit Packing Co.* v. *National Labor Relations Board* (303 U. S. 453, 82 L. Ed. 954); *Consolidated Edison Co.* v. *National Labor Relations Board* (305 U. S. 197, 83 L. Ed. 126). These cases are not in point, but because of the probable contentions of the advocates of this bill, we discuss them here in order to show their inapplicability.

The *Jones & Laughlin case* is the parent of all these National Labor Relations Board cases. Here the Supreme Court had under consideration the constitutionality of the National Labor Relations Act, legislation passed by Congress with the hope that it would eliminate serious labor disputes in the basic industries. The Government sought to uphold the act on the ground that labor controversies obstructed and adversely affected interstate commerce. The company challenged the act as an attempt to regulate all industry, a right not granted the Federal Government, but reserved by the tenth amendment to the States. A divided Court—5 to 4—held that Congress in enacting this law was duly conscious of the constitutional limitations imposed upon Federal power and, therefore, the obstructions and interferences arising from labor controversies must be direct in their effect and the commerce contemplated by the act must be interstate and foreign—thus conceived, the National Labor Relations Act was constitutional.

The court, in the majority opinion—written by Chief Justice Hughes, who in fact has written the opinions of the court in all of the basic cases in which the National Labor Relations Act is involved—considered three questions that are pertinent here. The first was with reference to the scope of the National Labor Relations Act. Under this head, the court says (p. 907):

"First. The scope of the act.—The act is challenged in its entirety as an attempt to regulate all industry, thus invading the reserved powers of the States over their local concerns. It is asserted that the references in the act to interstate and foreign commerce are colorable at best; that the act is not a true regulation of such commerce or of matters which directly affect it but on the contrary has the fundamental object of placing under the compulsory supervision of the Federal Government all industrial labor relations within the Nation. The argument seeks support in the broad words of the preamble (sec. 1) and in the sweep of the provisions of the act, and it is further insisted that its legislative history shows an essential universal purpose in the light of which its scope cannot be limited by either construction or by the application of the separability clause.

"If this conception of terms, intent and consequent inseparability were sound, the act would necessarily fall by reason of the limitation upon the Federal power which inheres in the constitutional grant, as well as because of the explicit reservation of the tenth amendment (*A. L. A. Schechter Poultry Corp.* v. *United States*, 295 U. S. 495, 549, 550, 554, 79 L. Ed. 1570, 1590, 1592, 55 S. Ct. 837, 97 A. L. R. 947). The authority of the Federal Government may not be pushed to such an extreme as to destroy the distinction, which the commerce clause itself establishes, between commerce 'among the several States' and the internal concerns of a State. That distinction between what is national and what is local in the activities of commerce is vital to the maintenance of our Federal system."

Continuing, the Court further says:

"We think it clear that the National Labor Relations Act may be construed so as to operate within the sphere of constitutional authority. The jurisdiction conferred upon the Board, and invoked in this instance, is found in section 10 (a), which provides:

" 'Sec. 10 (2). The Board is empowered, as hereinafter provided, to prevent any person from engaging in any unfair labor practice listed in section 8 affecting commerce.'

"The critical words of this provision, prescribing the limits of the Board's authority in dealing with the labor practices, are 'affecting commerce.' The act specifically defines the 'commerce' to which it refers section 2 (6):

" 'The term "commerce" means trade, traffic, commerce transportation, or communication among the several States, or between the District of Columbia or any Territory of the United States and any State or other Territory, or between any foreign country and any State, Territory, or the District of Columbia, or within the District of Columbia or any Territory, or between points in the same State but through any other State or any Territory or the District of Columbia or any foreign country.'

"There can be no question that the commerce thus contemplated by the act (aside from that within a Territory or the District of Columbia) is interstate and foreign commerce in the constitutional sense. The act also defines the term 'affecting commerce' [sec. 2 (7)]:

"The term 'affecting commerce' means in commerce, or burdening or obstructing commerce or the free flow of commerce, or having led or tending to lead to a labor dispute burdening or obstructing commerce or the free flow of commerce.

"This definition is one of exclusion as well as inclusion. The grant of authority to the Board does not purport to extend to the relationship between all industrial employees and employers. Its terms do not impose collective bargaining upon all industry regardless of effects upon interstate or foreign commerce. It purports to reach only what may be deemed to burden or obstruct that commerce and, thus qualified, it must be construed as contemplating the exercise of control within constitutional bounds. It is a familiar principle that acts which directly burden or obstruct interstate or foreign commerce, or its free flow, are within the reach of the congressional power. Acts having that effect are not rendered immune because they grow out of labor disputes."

Thus the majority opinion rejected the contention of the company that the National Labor Relations Act was an attempt to regulate all industry; but it carefully restricted the application of the act to those controversies only between industrial employers and employees which resulted in direct burdens on and obstructions of interstate and foreign commerce.

Under the question, the application of the act to employees engaged in manufacturing—the printed opinion uses the word "production" but manufacturing is what is discussed—the Court says (p. 911):

"Although activities may be intrastate in character when separately considered, if they have such a close and substantial relation to interstate commerce that their control is essential or appropriate to protect that commerce from burdens and obstructions, Congress cannot be denied the power to exercise that control. *A. L. A. Schechter Poultry Corp.* v. *United States, supra.* Undoubtedly the scope of this power must be considered in the light of our dual system of government and may not be extended so as to embrace effects upon interstate commerce so indirect and remote that to embrace them, in view of our complex society, would effectively obliterate the distinctions between what is national and what is local and create a completely centralized government. Id. The question is necessarily one of degree."

What is the Court saying here? Not that manufacturing is commerce, for it is not. It is saying that the distinction between manufacturing and commerce is "not determinative" where intrastate activities result in direct and undue obstructions to interstate commerce—where the effect of labor disputes upon interstate commerce is direct, material and adverse.

Under the remaining question, effects of unfair labor practice in the company's business, the Court finds:

"Giving full weight to respondent's contention with respect to a break in the complete continuity of 'the stream of commerce' by reason of respondent's manufacturing operations, the fact remains that the stoppage of those operations by industrial strife would have a most serious effect upon interstate commerce. In view of respondent's far-flung activities it is idle to say that the effect would be indirect or remote. It is obvious that it would be immediate and might be catastrophic. * * * When industries organize themselves on a national scale, making their relation to interstate commerce the dominant factor in their activities, how can it be maintained that their industrial labor relations constitute a forbidden field into which Congress may not enter when it is necessary to protect interstate commerce from the perilizing consequences of industrial war?

"* * * The steel industry is one of the great basic industries of the United States with ramifying activities affecting interstate commerce at every point. * * * It is not necessary again to detail the facts as to respondent's enterprise."

Here, the Court makes findings that the company's activities are for the most part interstate in character, and accepting the Labor Board's findings of unfair labor practices, it holds that such practices would have a very immediate and direct effect upon interstate commerce.

There was a vigorous dissent in this case by four of the justices, with Mr. Justice McReynolds writing the opinion. The dissenting justices recognized and accepted the constitutional principle announced by the majority that Congress has the power, under the commerce clause, to prevent direct and material interference with the conduct of interstate commerce—see the following in the opinion (p. 936):

"That Congress has power, by appropriate means, not prohibited by the Constitution, to prevent direct and material interference with the conduct of interstate commerce is settled doctrine. But the interference struck at must be direct and material, not some mere possibility contingent wholly upon uncertain events; and there must be no impairment of rights guaranteed."

but they differed radically with the majority over the application of the principle to the facts of the case, holding that the company's activities were local in character and the effect on interstate commerce by the labor controversies were indirect and remote in the highest degree.

From the foregoing, it is obvious that this case is completely inapposite to the regulation of the production of petroleum sought to be authorized by H. R. 7372. It is irrelevant both as to the principles of law announced and as to the facts.

The National Labor Relations Act deals with labor relations in the field of interstate commerce; it does not regulate production. H. R. 7372, on the other hand, seeks to regulate the production of petroleum before it enters commerce; it does not deal with labor relations. The two bills are radically different in their purpose, content and application. They differ fundamentally in concept.

In the *Jones & Laughlin case*, the Court found that the company was primarily engaged in interstate commerce. The ore had already been mined and had moved to the mills where products were being continuously made for immediate shipment. Interstate commerce had already begun. H. R. 7372, however, does not contemplate petroleum moving in commerce. It seeks to prescribe the rules and conditions under which oil and gas may be produced from the ground. As to whether an oil producer spaces his wells one to 10 acres or one to 40 acres and whether he drills a 7-inch hole or a 10-inch hole and whether he produces from a ¼-inch choke or a 1/64-inch choke—regulation of such matters is what is contemplated by the bill and such matters could have no relation whatever to interstate commerce. But when petroleum is found and brought to the surface, the act—excluding section 19, a penal section—has no further application. Under no theory has commerce begun.

The National Labor Relations Act and H. R. 7372 are also different in their effects—and this is the test prescribed by the majority opinion in the *Jones & Laughlin case.* Accepting the findings and conclusions of the court, labor disputes in industry engaged in interstate commerce seriously obstruct and can entirely stop interstate commerce. The National Labor Relations Act, therefore, by eliminating those disputes, removes such obstructions—its effect is to remove material obstructions to interstate and foreign commerce; and by removing obstructions commerce is speeded up and probably increased. On the other hand, applying the same reasoning to the field of petroleum production, unrestrained production of oil and gas increases the supply available for commerce; it increases commerce. (Increased supply means a cheaper product and a cheaper product results in greater use—thus commerce is increased.) Regulation of such production, however, the kind of regulation contemplated by H. R. 7372, such as the drilling of one well to 40 acres instead of one well to 10 acres, would in fact reduce the supply of oil and gas and therefore to the extent of such reduction constitute an obstruction to commerce. So this bill in its effect would cause an obstruction to commerce, the very thing its proponents claim they seek to eliminate.

Testing H. R. 7372, therefore, by the standard decreed by the Supreme Court of the United States in the *Jones & Laughlin case*—the effect on interstate commerce—it could not be sustained under the commerce clause.

The findings and holdings in the *Jones & Laughlin case*, therefore, in no manner contradict the verity of our analyses and statement of constitutional principles heretofore made in this brief nor do they impeach the foregoing cited decisions of our courts.

Turning now to the *Santa Cruz Fruit Packing Co. case, supra*, the company contended that its activities were local in character and the Labor Board was without jurisdiction over the labor dispute involved. A majority of the Court, however, again speaking through Chief Justice Hughes, found under the facts that the company was "directly and largely engaged in interstate and foreign commerce." The Court says:

"It would be difficult to find a case in which unfair labor practices had a more direct effect upon interstate and foreign commerce."

It should be noted in this connection that the fruit had already been grown and brought to the Santa Cruz plant for packing and shipment.

The Court again, however, was careful to restate the limitations within which the act can be applicable:

"The question that must be faced under the act upon particular facts is whether the unfair labor practices involved have such a close and substantial relation to the freedom of interstate commerce from injurious restraint that these practices may constitutionally be made the subject of Federal cognizance through provisions looking to the peaceable adjustment of labor disputes. * * *

"It is also clear that where Federal control is sought to be exercised over activities which separately considered are intrastate, it must appear that there is a close and substantial relation to interstate commerce in order to justify the Federal intervention for its protection. However difficult in application, this principle is essential to the maintenance of our constitutional system. The subject of Federal power is still 'commerce,' and not all commerce but commerce with foreign nations and among the several States. The expansion of enterprise has vastly increased the interests of interstate commerce, but the constitutional differentiation still obtains (*A. L. A. Schechter Poultry Corp.* v. *United States*, 295 U. S. 495, 546, 79 L. Ed. 1570, 1588, 55 S. Ct. 837, 97 A. L. R. 947).

" 'Activities local in their immediacy do not become interstate and national because of distant repercussions' (Id., p. 554).

"To express this essential distinction, 'direct' has been contrasted with 'indirect,' and what is 'remote' or 'distant' with what is 'close and substantial.' Whatever terminology is used, the criterion is necessarily one of degree and must be so defined."

Also in the *Consolidated Edison Co. case, supra,* the company took the position that the Labor Board had no jurisdiction over its disputes because the company was engaged in furnishing electricity, gas, and steam to the city of New York and Westchester County. Again the Court divided on the interpretation of the facts, the majority opinion finding that electric energy was furnished to the New York Central Railroad and other out-of-State railroads, the interstate tunnels, the Western Union Telegraph Co., and various other companies engaged in interstate commerce and held that interstate and foreign commerce was directly affected. The dissenting opinion denied that the company was engaged to any extent in interstate commerce. It is noteworthy in this connection that the dissenting opinion admits that in the *Jones & Laughlin case* and the other allied Labor Board cases, each of the employers was to an extent engaged in interstate commerce. It should also be noted that the electricity furnished the various interstate users had already been generated prior to its movement to such users.

The majority opinion says (Chief Justice Hughes):

"Congress did not attempt to deal with particular instances. It created for that purpose the National Labor Relations Board. In conferring authority upon that Board, Congress had regard to the limitations of the constitutional grant of Federal power. Thus, the 'commerce' contemplated by the act (aside from that within a Territory or the District of Columbia) is interstate and foreign commerce. The unfair labor practices which the act purports to reach are those affecting that commerce. Section 10 (a). In determining the constitutional bounds of the authority conferred, we have applied the well-settled principle that it is the effect upon interstate or foreign commerce, not the source of the injury, which is the criterion. It is not necessary to repeat what we said upon this point in the review of our decisions in the case of *National Labor Relations Bd.* v. *Jones & L. Steel Corp.* (301 U. S. 1, 81 L. Ed. 893, 57 S. Ct. 615, 108 A. L. R. 1352, supra). And whether or not particular action in the conduct of intrastate enterprises does affect that commerce in such a close and intimate fashion as to be subject to Federal control, is left to be determined as individual cases arise. Ibid., see, also, *Santa Cruze Fruit-Packing Co.* v. *National Labor Relations Bd.* (303 U. S. 453, 466, 467, 82 L. Ed. 954, 960, 961, 58 S. Ct. 656)."

Clearly, therefore, these National Labor Relations cases are not applicable to the facts under consideration and to H. R. 7372. They are not in point.

Nor do those decisions of this Court involving the constitutionality of various farm-aid acts—*Currin* v. *Wallace, Secretary of Agriculture* (306 U. S. 1, 83 L. Ed. 441); *Mulford* v. *Smith* (307 U. S. 38, 83 L. Ed. 1092); *U. S.* v. *Rock Royal Co-Operative Co.*, (307 U. S. 533, 83 L. Ed. 1446)—lend any support to the defense of H. R. 7372. They also are inapposite.

In the *Currin case* the constitutionality of the Federal Tobacco Inspection Act of 1935 was involved. The plaintiffs, tobacco warehousemen and auctioneers, in Oxford, N. C., sought a declaratory judgment that the said Inspection Act was unconstitutional. The Court again divided, the majority through an opinion by Chief Justice Hughes holding that the act was constitutional and applicable to the plaintiffs under the facts.

The majority opinion says:

"The act states its scope and purpose. S S 1, 2. It applies to transactions involving the sale of tobacco at auction as commonly conducted at auction markets. These transactions are carried on by tobacco producers and by persons engaged in the business of buying and selling tobacco in commerce as defined, that is, in commerce which is interstate or foreign or is with or within the Territories or the District of Columbia."

* * * * * * *

"First. Plaintiffs urge that tobacco 'is not inherently an interstate commodity'; that the auction transaction is not a sale as title is not passed until the grower accepts the price; that after the auction the grower may, and often does, reject the bid and he may take his tobacco away; that the inspection required by the act is done prior to the offering for sale; and that until sale and delivery to the purchaser the tobacco is not in interstate commerce and its control is reserved to the State. These objections are untenable. The record shows that the sales consummated on the Oxford auction market are predominantly sales in interstate and foreign commerce. The principal purchasers are few in number and in the main are engaged in the export trade or in the manufacture of tobacco products in other States. It appears that in a given week, shortly before the beginning of this suit, approximately 2,000,000 pounds of tobacco were sold on the Oxford market, only 15.3 percent of which were definitely destined for manufacture in North Carolina. About 14 percent were in part for manufacture in North Carolina and in part for other States, and about 62 percent moved directly into foreign commerce. The fact that the growers are not bound to accept bids, and in certain instances reject them, does not remove the auction from its immediate relation to the sales that are consummated upon the offers that the growers do accept. The auction in such cases is manifestly a part of the transaction of sale. So far as the sales are for shipment to other States or to foreign countries, it is idle to contend that they are not sales in interstate or foreign commerce and subject to congressional regulation. Where goods are purchased in one State for transportation to another the commerce includes the purchase quite as much as it does the transportation."

In *Mulford* v. *Smith*, plaintiffs sought to enjoin as unconstitutional the enforcement of the penalty prescribed by the Agricultural Adjustment Act for sales of tobacco in excess of marketing quotas established under the act. Again by a divided Court, the majority sustained the act. The plaintiffs asserted (among other things) that the act was a statutory plan to control agricultural production and, therefore, beyond the powers delegated to Congress. The Court rejected this contention, saying with reference thereto:

"The statute does not purport to control production. It sets no limit upon the acreage which may be planted or produced and imposes no penalty for the planting and producing of tobacco in excess of the marketing quota. It purports to be solely a regulation of interstate commerce, which it reaches and affects at the throat where tobacco enters the stream of commerce— the marketing warehouse."

These two cases are clearly not in point. H. R. 7372 applies solely to the production of petroleum from the ground; in the *Currin case* the tobacco had already been grown and moved to the auction markets and already entered into interstate and foreign commerce; while in the *Mulford case* the act applied only after the tobacco was grown. In fact, in the *Mulford case* the Court, as heretofore stated, specifically found that the act did not purport to control production, thus recognizing and in effect reaffirming the doctrine announced in *U. S.* v. *Butler*, *supra* (where the Court struck down the Agricultural Adjustment Act because it did directly attempt to control agricultural production).

In connection with these tobacco cases, we call attention to *Townsend* v. *Yeomans* (301 U. S. 441, 81 L. ed. 1210). In this case, the plaintiffs sought a decree from the Federal Court to restrain as unconstitutional the enforcement of a Georgia statute fixing minimum charges for handling and selling leaf tobacco and they charged that the tax placed a direct burden upon interstate commerce in violation of the commerce clause, alleging that practically all of the tobacco grown in the State was shipped out of the State, etc. The Court rejected this contention, saying:

"Laying on one side the Federal statute as in no way inconsistent, we find no ground for concluding that the State requirements lay any actual burden upon interstate or foreign commerce. The Georgia act does not attempt to fix the price at the auction sales or to regulate the activities of the purchasers."

In *U. S.* v. *Rock Royal Co-Operative, Inc.*, *supra*, the Government sought mandatory injunctions requiring the defendants to comply with an order of the Secretary of Agriculture regulating the handling of milk in the New York metropolitan area, the order being issued under the Agricultural Marketing Act of 1937. Again the Court divided 5 to 4. The majority sustained the findings by the Secretary of Agriculture that two-thirds of the milk produced for the New York marketing area actually moved in interstate commerce and that all was handled either in the current of commerce or so as to burden and obstruct interstate commerce.

Here also there was no attempt to control the production of milk; and under the facts the Court held that the products were in interstate commerce. Therefore, this case also is inapplicable to H. R. 7372.

The proponents of H. R. 7372 can draw no support from these National Labor Board and Farm aid cases. Properly analyzed, their inapplicability becomes evident. No new principles of law are announced by these cases and they are all distinguishable under the facts.

Petroleum Before Severance Is Real Estate in Texas

Another phase of the same question, and one which emphasizes the absurdity of H. R. 7372, is that such bill seeks to regulate the natural deposits of oil and gas in the ground and thus regulates real property. In Texas—and many other States—minerals in the ground are real estate, real property. The fee owner owns the oil and gas in place. The oil-and-gas lease is a determinable fee in the land. The royalty owner owns a mineral interest and this is real estate. These are established rules of property, recognized by both State and Federal courts. Some of the important decisions are the following: *Texas Co.* v. *Daugherty* (176 S. W. 717); *Stephens County* v. *Mid-Kansas Oil & Gas Co.* (264 S. W. 290); *Caruthers* v. *Leonard* (254 S. W. 779); *Brown* v. *Humble* (83 S. W. (2d) 935); *Tennant* v. *Dunn* (110 S. W. (2d) 53); *Thompson* v. *Consolidated Gas Utilities Corp.* (300 U. S. 55, 81 L. ed. 510).

In *Brown* v. *Humble*, *supra*, the Supreme Court of the State of Texas says:

"The rule in Texas recognizes the ownership of oil and gas in place, and gives to the lessee a determinable fee therein."

In *Thompson* v. *Consolidated Gas Utilities Corporation*, *supra*, the Supreme Court, speaking through Mr. Justice Brandeis, says (p. 517):

"Prior to the encatment of House bill 266, the property rights of the plaintiffs were substantially those conferred by the common law of the State. Under it, the owner of land has title to oil and gas in place and, likewise, to the oil and gas which migrate to formations under his land through drainage from other lands. Under that rule, he may produce all the oil and gas that will flow out of the well on his land, subject to the exercise by other landowners of the same right of capture through drilling offsetting wells, so as to get their full share. This common-law rule, declared in an unbroken line of authorities, has been widely applied."

H. R. 7372, therefore, seeks to regulate real property situated in the various "fields" in the various States and its proponents would uphold the same on the theory that it is regulating "interstate commerce." But how can real property be commerce or "in" commerce? How can real estates cross State lines? "Situs," "locus," "real estate," "lands," "oil in place" all repel the idea of movement or commerce. The oil and gas in place cannot be commerce nor even begin to be in commerce until severance from the ground is had—until the petroleum is brought out of the ground through the well, at which time and only at such time, does it cease to be real property and change its legal status from real estate to personal property. And this bill (exclusive of sec. 19, a penal section) deals only with the petroleum in the ground; it has no application to the oil and gas after they leave the hole, after severance from the ground.

This point is recognized by the United States Supreme Court in the case of *Ohio Oil Co.* v. *Indiana*—a State in which the oil-in-place theory does not obtain (177 U. S. 190, 44 L. ed. 729):

"In view of the fact that regulations of natural deposits of oil and gas and the right of the owner to take them as an incident of title in fee to the surface of the earth, as said by the Supreme Court of Indiana, is ultimately but a regulation of real property, and they must hence be treated as relating to the preservation and protection of rights of an essentially local character."

Furthermore, in Texas, the public domain is owned by the State, not by the Federal Government. For 10 years Texas was a sovereign nation, having won her independent from Mexico. When negotiations were begun with the United States for the joinder of Texas to the Union, a treaty was drawn to effectuate that purpose and it was provided therein that the Republic of Texas should cede to the United States, in return for the payment of her public debt, all of her public domain. This treaty, however, failed of confirmation by the Senate, because the Senate did not wish the United States Government to assume this debt. Thereupon annexation of Texas was effectuated by a joint resolution of Congress, which omitted this proposal and the resolution was thereafter subsequently ratified by the Congress of Texas. Article 2 of this joint resolution provides as follows:

"* * * Said State, when admitted into the Union, after ceding to the United States, all public edifices, fortifications, barracks, ports, and harbors, navy and navy yards, docks, magazines, arms, armaments, and all other property and means pertaining to the public defense belonging to the said Republic of Texas, shall retain all the public funds, debts, taxes, and dues of every kind, which may belong to or be due and owing said Republic; and shall also retain all the vacant and unappropriated lands lying within its limits, to be applied to the payment of the debts and liabilities of said Republic of Texas, and the residue of said lands, of said lands, after discharging said debts and liabilities, to be disposed of as said State may direct; but in no event are said debts and liabilities to become a charge upon the Government of the United States. * * *"

At the present time all of the unappropriated public domain, consisting of several million acres, has been set apart and granted to the University of Texas, the eleemosynary institutions, and the common schools of Texas. A substantial portion of these lands are now producing oil and gas and a greater portion is potentially productive. What then of these lands? How can the Congress legislate with respect to the production of oil and gas from these State-owned lands?

It is unthinkable to suppose that the constitutionality of H. R. 7372 can be upheld as a valid exercise by Congress of its power to regulate commerce among the States.

The Sovereign State Has the Exclusive Power to Regulate the Production of Petroleum

If the Congress has no constitutional authority to regulate the production of crude petroleum, where then does the power rest? In the States and the people of the respective States—as evidenced by the tenth amendment and as further confirmed by various of the opinions hereinbefore set out. This is well settled.

The regulation of production of crude petroleum is but an exercise of the police power, a power under the American constitutional system retained by the States. This regulation must be reasonable and must meet the constitutional requirements of the individual States, but within these limits the power is unquestioned.

The following cases are sufficient authority in support of the foregoing: *Gibbons* v. *Ogden* (9 Wheat. 1, 6 L. Ed. 23); *Slaughter House cases* (83 U. S. 522, 21 L. Ed. 394); *Patterson* v. *Kentucky* (97 U. S. 501, 24 L. Ed. 1115); *Butchers' Union Slaughter House Co.* v. *Crescent City Livestock Co.* (111 U. S. 746, 28 L. Ed. 585); *U. S.* v. *E. C. Knight Co.* (156 U. S. 1, 39 L. Ed. 325); *Ohio Oil Co.* v. *Indiana* (177 U. S. 190, 44 L. Ed. 729); *Phillips* v. *Mobile* (208 U. S. 472, 52 L. Ed. 578); *Keller* v. *U. S.* (213 U. S. 138, 53 L. Ed. 737); *Lindsley* v. *Natural Carbonic Gas Co.* (220 U. S. 61, 55 L. Ed. 369); *Hammer* v. *Dagenhart* (247 U. S. 251, 62 L. Ed. 1101); *Bandini Petroleum Co.* v. *Superior Court of Los Angeles County* (284 U. S. 8, 76 L. Ed. 136); *Champlin Refining Co.* v. *Corporation Commission* (286 U. S. 210, 76 L. Ed. 1062); *Panhandle Eastern Pipeline Co.* v. *State Highway Commission of Kansas* (294 U. S. 613, 79 L. Ed. 1090); *Thompson* v. *Consolidated Gas Utilities Corporation* (300 U. S. 55, 81 L. Ed. 510); *Oxford Oil Co.* v. *Atlantic Oil & Producing Co.* (16 F. (2d) 639, affirmed 22 F. (2d) 597, certiorari denied 277 U. S. 585, 72 L. Ed. 1000); *Danciger Oil & Refining Co.* v. *Smith* (4 Fed. Supp. 263); *Atlas Pipe Line Co.* v. *Sterling* (4 Fed. Supp. 441).

Extended quotations from the decisions should not be necessary. We submit the following as illustrative: The circuit court of appeals in *Oxford Oil Company* v. *Atlantic, supra:*

"The right of a state to so regulate the drilling of wells for oil and gas as to conserve the rights of adjoining owners is too well settled to admit of serious controversy."

The Supreme Court of the United States in *Thompson* v. *Consolidated Gas Utilities Corporation, supra:*

"Second. The defendants contend that the order assailed is a regulation duly promulgated for the prevention of waste, and the protection of correlative rights of owners in the common pool, and was so applied. It may be assumed that House Bill 266 should be construed as authorizing regulations to prevent waste, and to create and protect correlative rights of owners in a common reservoir of gas to their justly proportionate shares thereof, free of drainage to neighboring lands. It may be assumed, also, that the statute, so construed, is a valid exercise of the State's undoubted power to legislate to those ends; and that it validly delegates to the Railroad Commission authority to promulgate regulations therefor."

HOW CONGRESS, UNDER THE CONSTITUTION, CAN MEET THE GOVERNMENT'S REQUIREMENTS FOR PETROLEUM

Those sponsoring H. R. 7372 seek support therefor with the argument that petroleum is an irreplaceable natural resource, essential to the national defense. Certainly, petroleum is essential to the national defense. But it is neither exhausted nor irreplacable. Regardless, however, of the true facts with reference thereto, Congress must proceed in an orderly and constitutional manner in supplying the Government's needs. Necessities do not authorize unconstitutional methods.

How can Congress constitutionally provide for the national defense in respect to its petroleum needs? By conserving the oil in the lands already owned by the United States and by purchasing oil-bearing lands from others.

The first is a matter of administration. The last is a matter of Congressional appropriation.

Congress has ample power under the Constitution to make appropriation for the purchase of oil-bearing lands. Section 8 (1), article I, supra, quite clearly and definitely gives Congress the power to lay and collect taxes for the purpose of providing for the common defense and if Congress in its good judgment believes that the purchase of petroleum-bearing lands is necessary for the common defense, it has full power to appropriate for such purchases.

This power in Congress under clause (1) is fully recognized by *U. S.* v. *Boyer* (85 Fed. 425), and *U. S.* v. *Butler* (297 U. S. 1, 80 L. Ed. 477), cases heretofore cited in this brief when treating of the national-defense theory.

Quite probably, too, section 8 (12) and (13), the clauses granting Congress the power to support Armies and maintain a Navy, grant the power to Congress to provide for such purchases.

Other cases supporting the foregoing are the following: *U. S.* v. *Eason Oil Co.*, supra (8 Fed. Supp. 365); *Tennessee Elec. Power Co.* v. *Tennessee Valley Authority* (21 Fed. Supp. 947), appeal dismissed in part (59 S. Ct. 54); *Ashwander* v. *Tennessee Valley Authority* (297 U. S. 288, 80 L. Ed. 688); *New York ex Rel Rogers* v. *Graves* (299 U. S. 401, 81 L. Ed. 306).

In the *Eason case*, *supra*, the court says (p. 376): "If Congress is of the opinion that any resource in this Nation is essential to the maintenance of this Government and its proper defense, it has ample power under the Constitution to purchase oil lands and hold them for the benefit of the Government. But, so long as the individual citizen is permitted to hold property, his rights in property are protected under the Constitution."

Mr. Hughes, in his legal brief heretofore cited, also says:

"Government's requirements of oil; including oil for the Navy, etc.—Of course the Government is entitled to provide for the common defense, and to secure suitable provision of oil for all its proprietary uses and for its naval and military service. It does not appear that the making of such provision requires, or involves, the exercise of any authority to control production within the States and thus take over the internal concerns of the States.

"The Federal Government has a large public domain. Instead of granting future oil leases, it can keep the oil within its property not already disposed of, if it so desires, and conserve it for itself. If the oil tracts within its domain are not deemed to be sufficient for this purpose, the Government can acquire other tracts. There is no limit to the power of acquisition of oil properties in order to meet the needs of the Army ond Navy, or to provide for other governmental uses, except the limit which Congress may put upon the use of public moneys for that purpose and the disposition of the people to pay taxes. So far as power is concerned, the Government can acquire for its uses all the oil lands that it needs, if it is willing to pay for them; and, as has been indicated, if the Government desires to conserve the oil in the ground, it can do so on its own properties within the public domain, and if this oil supply is threatened by contiguous properties, Congress may direct the acquisition of such properties upon proper compensation to the owners, to the extent deemed necessary.

"It is also possible for Congress to purchase whatever oil and oil products, so far as it may deem it to be desirable to do so, in order to provide for the future, and store them in appropriate receptables which will hold it without waste.

"The acquisition of oil properties or of oil and oil products, in order to meet the needs of the United States as a proprietor, is a mere question of an estimate of needs and of financial policy.

"Provision for governmental uses, to meet the needs of the United States as a proprietor, is quite distinct from an attempted regulation or curtailment of production within the States in a general public interest, for the purpose of carrying out a policy of conserving oil in the ground so that it may await the economic needs of the country at large in the future. The latter would be the exercise not of the power to tax and to purchase for governmental uses, but of a power to control production upon private property within the States and subject to the sovereignty of the States respectively. It is not conceivable that any theory will be advanced by the legal advisers of the Government to support such a course of action, however desirable a policy of conservation it may seem to be. It is idle under the Constitution to attempt to secure by Federal regulation the curtailment of production or to require unified operations in production by private owners within fields subject to the jurisdiction of the States."

From the foregoing, it is clear that Congress possesses ample constitutional powers to provide for the purchasing of oil-bearing lands in order to meet the requirements of the national defense.

And if for any reason the owner of oil-bearing lands will not voluntarily sell, the United States Government has the power to assert its undoubted right of eminent domain—subject to reasonable compensation to the owner, of course. This principle is universally acknowledged and the following cases are conclusive thereon: *In re Rugheimer* (36 Fed. 369 (1888)); *Kohl* v. *United States* (91 U. S. 367, 23 L. Ed. 449); *Luxton* v. *North River Bridge Company* (153 U. S. 525, 38 L. Ed. 808); *U. S.* v. *Gettysburg Elec. Ry. Co.* (160 U. S. 668, 40 L. Ed. 576).

There are many areas in the various oil-producing States that have not as yet been developed for oil and gas but which are potentially productive thereof and which could be acquired by the Federal Government at very reasonable cost. Many of these lands are along the tidewaters of the respective States. By the acquirement of such areas, as well as other lands, and the proper conserving of the oil in the lands it already owns, the United States Government can adequately meet its petroleum requirements.

Conclusion

We feel that in the citation and discussion of the above authorities it has been proven beyond doubt that the Federal Government has no constitutional authority to control the production of petroleum, either under the claimed necessity of providing for the national defense, or under the guise of regulating interstate and foreign commerce.

We respectfully urge that this honorable committee give serious consideration to the constitutional questions involved. This having been done, we are firm in our confidence that the committee will recommend that the bill do not pass.

Believing that this committee will always keep uppermost in its mind the desirability as well as the necessity of preserving our dual form of republican government, to the end that all Americans may continue to enjoy the pricelses heritage of liberty, we commend to the committee the thought so well expressed by Mr. Chief Justice Chase in *Texas* v. *White* (7 Wallace 700, 19 L. Ed. 227, at page 237): "Not only, therefore, can there be no loss of separate and independent autonomy to the States, through their Union under the Constitution, but it may be not unreasonably said that the preservation of the States, and the maintenance of their governments, are as much within the design and care of the Constitution as the preservation of the Union and the maintenance of the National Government. The Constitution, in all its provisions, looks to an indestructivle Union, composed of indestructible States."

Respectfully submitted.

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Dated at Houston, Tex., December 20, 1939.

We will now hear Mr. Schilthuis.

STATEMENT OF RALPH J. SCHILTHUIS, HOUSTON, TEX.

Mr. SCHILTHUIS. I presume that you would like for me to state my qualifications?

Mr. COLE. Yes, sir.

Mr. SCHILTHUIS. My name is Ralph Schilthuis. I am a petroleum engineer by profession, residing in Houston, Tex. I am employed by the Humble Oil & Refining Co.

I attended and graduated from the Colorado School of Mines, receiving the degree of petroleum engineer in June 1930. Immediately thereafter, I became associated with the Humble Oil & Refining Co., first as a student engineer in the technical-service division of the refining department, where I remained until January 1931. Since that time I have been engaged principally in the production end of the business as a research engineer. Most of my work with the Humble Oil & Refining Co. has dealt with the development and operation of oil and gas fields located in the States of Texas, Louisiana, and New Mexico. The work has been concerned fundamentally with the development of means and practices to increase the efficiency of extraction. This has involved studies of the characteristics and properties of oil and gas, the physical nature and behavior of oil and gas reservoirs, and the effects of various operating techniques and practices such as (*a*) the manner of completion and spacing of wells, (*b*) the control of gas and water production, and (*c*) the rate of withdrawal of oil and gas on efficiency.

I am the author or coauthor of several technical papers dealing with certain phases of these subjects.

I have also appeared on numerous occasions as an expert witness at hearings before the Railroad Commission of Texas.

I appear before the committee to present engineering testimony concerning the efficiency of petroleum production operations in Texas, Louisiana, and New Mexico. In this capacity, I am here at the invitation of the industry groups that have arranged for the presentation of the testimony to this committee. I am presenting my own views. I believe that the views which I present coincide with those of my associates in the company by which I am employed and, in the main, with petroleum engineers familiar with the territory that I am covering. However, I am not attempting to represent them.

I have a prepared statement on the subject "The Efficiency of Petroleum Production Operations in Texas, Louisiana, and New Mexico," copies of which I believe are already in the hands of the committee. I have also prepared a supplemental statement discussing the report filed with the committee on February 8, 1940, by the Department of the Interior, alleging physical waste in Texas, Louisiana, and New Mexico, among other areas. I do not know whether the committee has had an opportunity to read and consider my main prepared statement. At the pleasure of the committee I am prepared either to read my statement and supplement the combined length of which is approximately 20 typewritten pages, or to present an outline of the contents. I believe I can present the material in full in about 45 minutes.

Mr. Cole. Suppose you file your statements and pursue the latter course.

Mr. Schilthuis. Thank you. In that event, I would like to be given the opportunity to present certain sections in some detail from both the main statement and the supplement. I believe there are certain sections that will be of particular interest to the committee.

THE EFFICIENCY OF PETROLEUM PRODUCTION OPERATIONS IN TEXAS, LOUISIANA, AND NEW MEXICO

There can be little doubt but that a sound policy of conservation with respect to our oil and gas resources serves the best interests of the public and the oil industry alike, for, in the final analysis, the interests of each are one and the same. A sound policy of conservation requires that production operations be efficient and that physical waste be held to the reasonably unavoidable minimum consistent with the technologic, economic, and practical conditions surrounding and governing the operations at any time.

It is the purpose of this paper to consider the efficiency of production operations in the States of Texas, Louisiana, and New Mexico, and to determine whether or not any substantial amount of reasonably avoidable physical waste is occurring in this territory. As a background for analyzing the degree of effectiveness of the States' regulation and of the industry's practices in controlling avoidable physical waste, the basic nature and causes of physical waste are discussed briefly. To call to mind the relative importance of the territory here under consideration in the national picture of oil production, attention is directed to the fact that it accounts for approximately 64 percent of the estimated total current oil reserves of the United States. Texas alone has 55 percent, with Louisiana having 4.5 percent and New Mexico 4.0 percent.

THE NATURE AND CAUSES OF PHYSICAL WASTE

The term "physical waste" as it applies to the production of oil and gas covers both surface waste and underground waste, which may be more specifically indicated as follows:

A. Surface waste:

1. Loss of oil by evaporation, burning, or other nonuseful destruction.
2. Loss of gas by escape to the air or burning.

B. Underground loss of recoverable oil or waste of gas through—

1. Failure to take advantage of the natural forces which may be made effective to recover oil.
2. Waste or improper use of reservoir energy.
3. Irregular encroachment of water and entrapment.
4. Undue dissipation of reservoir pressure.
5. Excessive gas production or escape of gas or oil from the indigenous formation to other formations.
6. Excessive water production.

The above definitions of the term "physical waste" carry essentially the same meaning as those set forth in H. R. 7372 and in the conservation statutes of the States of Texas, Louisiana, and New Mexico. In considering these definitions or forms of waste, it is important to understand that they are not all specific but rather that many of them are interrelated or overlapping, as will be explained hereinafter.

The nature and causes of the surface wastes outlined under A above above are self-evident.

The causes of underground waste listed under B are quite involved and are worthy of consideration at this point. For convenience, they may be classified under direct or mechanical causes and indirect causes and listed as follows:

A. Direct or mechanical causes of underground waste:

1. Improper well completions.
2. Faulty production practices.
3. Failure to perform repair or corrective work.

B. Indirect causes of underground waste:

1. Excessive rates of production of (*a*) a field as a whole, (*b*) individual wells or localized areas within a field.
2. Improper allocation of allowable.
3. Unnecessary drilling or improper spacing of wells. The direct causes of underground physical waste are related chiefly to the mechanical condition and operation of wells, involving circumstances which directly lead to or cause excessive production of gas and water in connection with the production of oil and in turn the undue dissipation of reservoir pressure and improper utilization of reservoir energy. The same circumstances may permit escape and loss of oil or gas from the indigenous reservoir to other formations.

The indirect causes of underground physical waste are interrelated and bear primarily on the control of the rate of production. This involves, first, the control of the total rate of production from a field as a whole and, second, the control of the rate of production of individual wells or local areas within a field. Not discounting the importance of such direct causes of underground waste as unreasonably high gas-oil ratios, it has been learned from practical operating experience and from study of the basic physical laws governing the behavior and mechanics of movement of fluids underground, that rate of production, particularly the total rate of production from a field, is usually the most important single and readily controllable factor governing the efficiency of oil recovery. Rate of production in fact markedly influences the direct causes of waste. Control of rate of production is important in the strictly gas-drive type of field as well as in the water-drive type or the combinations of types, but it is of especial significance in cases where water drive is or may be made effective. Most fields in Texas, Louisiana, and New Mexico possess water drive at least to some degree. Ordinarily, the major fields possess active water drive.

THE REQUISITES OF EFFICIENT UNDERGROUND OPERATION

As a broad general principle, it may be said that, other things being equal, the lower the total rate of production of oil from a field, the higher the ultimate recovery of oil will be for any type field. As a practical matter, however, experience and the best concepts indicate that no substantial benefits with respect to ultimate recovery are to be derived from producing at rates slower than are required to bring about the following general conditions requisite of efficient underground operation, all of which or only certain ones of which may be pertinent in varying degree to fields of various types:

1. Maximum utilization of natural water drive in preference to gas drive in all cases where it is practical to cause natural water drive to be effective. This is desirable because displacement of oil by water is considerably more effective or efficient than by gas drive.
2. Uniform or regular displacement of oil by water drives out of all sections of the reservoir through which the water may reasonably be made to advance so that entrapment is minimized.
3. Uniform displacement of oil by an expanding gas cap in cases where water drive is not or cannot reasonably be made effective, so that bypassing of gas in minimized and the maximum efficiency capable of gas drive is realized.
4. Maintenance or reasonable control of the decline of reservoir pressure.
5. Reasonable control of gas-oil ratios and water production.

Excessive rates of oil production, either from a field as a whole or from any localized area within a field, bring about conditions which are directly opposed to the requisites of efficient underground operation outlined above. Excessive production rates cause inordinate decline in reservoir pressure, with resultant release of dissolved gas from solution in the oil and impairment of certain desirable properties of the oil which are conducive to high recovery. Even more important is the fact that at excessive production rates there exists a natural tendency for gas and water to channel through the more permeable parts of the reservoir. All of these conditions cause or contribute to (*a*) excessive production and waste of gas and improper control of water and (*b*) entrapment and loss of oil in the less permeable parts of the reservoir. To prevent or minimize these effects, it is necessary to control the rate of production within the limit that the capillary and gravitational forces which are operative within the reservoir are capable of overcoming the tendency for gas and water to channel and of causing displacement and recovery of oil with equal completeness out of both the more permeable and less permeable parts of the reservoir.

INFLUENCE OF ALLOCATION AND WELL SPACING ON WASTE

In the light of the foregoing, it becomes evident that both the method of allocation or proration of allowables between wells and properties and the well spacing can exert considerable influence upon the physical efficiency of the operations because of the bearing that they may have upon the total rate of production from a field and upon localized withdrawals. Improper allocation leads to the drilling of wells unnecessary to the recovery of all of the recoverable oil from the field purely in the attempt of one operator to gain advantage over another. Such unnecessary drilling of wells unnecessarily piles up capital investment and inevitably brings economic pressure to seek higher allowable production rates which in turn leads to physical waste through (*a*) the building up of an excessive production rate for the field as a whole and (*b*) excessive withdrawals from localized densely drilled areas. In general it may be said that if the allocation plan is proper, the well-spacing problem is almost automatically removed and requires practically no regulation. The allocation of allowable production to a property should not be on a flat per-well basis and depend simply upon the number of wells that may be drilled thereon. Experience proves that such a basis leads to the competitive drilling of unnecessary wells mentioned above unless the spacing is fixed initially on a uniform basis. Proper allocation between properties requires that adequate consideration be given to relative recoverable reserves or relative acreage or both. If the allocation is made on a flat-well basis, it is necessary that there be regulations requiring uniform spacing of wells at a density no greater than is necessary to effect efficient recovery of the oil.

There has been much confusion of thought in the past concerning the matter of the effect of well spacing or well density alone, other things being equal, on ultimate recovery. However, sound interpretation of field experience, results of experimentation designed to study this question, and consideration of the basic physical laws governing the behavior of oil reservoirs all combine to throw the proper light on the matter. They show that where the total rate of production of a field is controlled to within the limit of the range of the most efficient rates, a density of one well to 20 acres is entirely adequate, except where the productive formation may possibly be very lenticular, broken, or poorly interconnected. Cases of this kind might exist in the so-called "shoestring" sand fields or in some piercement-type domal fields. In many instances wider spacing than 20 acres per well is satisfactory.

CONDITION OF OPERATIONS IN TEXAS, LOUISIANA, AND NEW MEXICO CONCERNING WASTE

SURFACE WASTE OF OIL

With respect to the surface wastes of oil and gas classified on page 1, the statutes of each of the States of Texas, Louisiana, and New Mexico adequately cover and prohibit all reasonably preventable waste of this nature. The loss of oil by evaporation, burning, or other nonuseful destruction is held to a substantially irreducible practicable minimum. While such loss of oil was prevalent in the earlier days of the industry, due largely to recurrent periods of overproduction, it is now effectively curbed by State restriction of production. As a matter of fact, the industry has long since realized that it is nothing more than good business to minimize this loss and any other form of regulation is hardly necessary. Nevertheless, each State has effective regulation which requires adequate tank storage and forbids storage in open pits.

WASTE OF GAS

A. *State regulations and other efforts to control gas waste.*—The loss or waste of gas by escape to the air or burning involves gas produced from (*a*) gas fields or so-called "distillate fields" in which all of the hydrocarbon materials exist in the reservoir in the gaseous state and (*b*) oil fields as an incident to oil production. With respect to the former, the statutes of each of the three States expressly forbid the withdrawal of gas from essentially gas fields except for domestic or industrial uses such as light, heat, power, and the manufacture of chemicals, or for processing of the gas to remove liquefiable constituents, in which case the processed or residue gas must be returned to the indigenous formation if not used for the domestic or industrial purposes mentioned. Another provision of the Texas statute is that only sour gas may be used for the manufacture of carbon black.

In considering the waste of gas produced from oil fields and the efforts to control such waste, it is very important to keep in mind that the production of a certain amount of gas with the oil is an unavoidable incident to the production of the oil. In some fields the oil can be produced at essentially the dissolved gas-oil ratio, which is the absolute minimum; but others, where the oil producing section is relatively thin and where a free gas cap overlies a large portion of the body of oil, produce with inherently high ratios despite employment of the best-known operating practices. Thus, the question of gas waste in connection with oil production, even assuming that the gas is not put to a domestic or industrial use, resolves itself to the question of what is reasonable waste or what is reasonably avoidable waste. In the broadest sense, any gas which is produced alone or with oil and not put to a domestic or industrial use is wasted. However, waste of gas produced with oil in the sense of dissipation without utilization otherwise than in the production of oil cannot as a practical matter be fully prevented. A large part of such dissipation is unavoidable and must be so designated. Avoidable waste of gas should refer only to the gas produced in excess of that reasonably necessary to the efficient recovery of the oil and to that withdrawn from essentially gas fields in excess of amounts required to supply domestic and industrial uses.

As previously stated, the avoidable waste of gas from oil fields as an incident to oil production involves not only the waste of the gas itself, but also the possibility of underground physical waste of oil. The production of only the gas dissolved in the oil cannot be said to affect underground waste of oil. The production of excessively large quantities of free gas in excess of the dissolved gas normally contributes to underground waste of oil as previously discussed. On the other hand, in some instances the failure to produce a certain limited amount of free gas in addition to the dissolved gas may in fact cause underground waste of oil by failure to take full advantage of the previously mentioned superior displacement efficiency of oil by water dried over the displacement efficiency of an expanding gas cap. For the same reasons it may not be desirable in many cases, even from the purely physical standpoint, to return produced gas to the reservoir. All of this is a rather close control ordinarily and does not minimize the definite desirability of preventing excessive production of gas.

As far as the purely mechanical completion and operation of wells affects either the reasonably avoidable surface or underground waste of oil or gas, the operators fully realize that it is to their own benefit individually to do everything that is possible and economically practical to complete their wells properly, keep them in good repair, and employ the best-known operating practices. The story of the continued progressiveness of the industry in seeking to improve its mechanical technique and learn the secrets of further improvements in efficiency is well covered by Miller and Shea, of the Bureau of Mines, in their testimony [1] before this Committee and need not be dealt with further here. The State regulatory bodies of the States of Texas, Louisiana, and New Mexico have kept abreast of this progress by incorporating into their orders fairly effective regulations covering drilling and completion practices.

The Texas regulation has taken a leading part in furthering control of the reasonably avoidable waste of gas produced with oil by setting a State-wide maximum of 2,000 cubic feet per barrel upon the gas-oil ratio with which oil wells may be produced. In certain cases the limit is altered to fit local conditions. The gas-oil ratio limit operates to penalize high gas-oil ratio wells and to allow them to produce only on a volumetric parity with normal wells. Table I shows the extent of application of this particular regulation, setting out the number of wells involved, their production, and the saving of gas effected. It is to be noted that 1,332 wells are influenced which are allowed a total production of 25,459 barrels per day, amounting to only 1.8 percent of the total for the State. These wells are penalized about 45 percent, which affords an estimated saving of nearly 163 million cubic feet of gas per day. While this regulation is not completely effective, the data presented on its application show that the problem of excessive gas-oil ratio production is not widespread. It is confined to only 20 percent of the total number of fields, and, while sizable in some of these, in the aggregate it involves a small fraction of the total production of the State.

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[1] Report on Recent Progress in Petroleum Development and Production: Petroleum Investigation (U. S. Congress, House of Representatives, hearing on H. Res. 290 and H. R. 7372, Nov. 6, 7, 8 and 10, 1939, Washington, D. C.), pp. 332–376.

Somewhat less action with respect to promulgation of regulations to control the production of gas with oil has been taken by the regulatory authorities in Louisiana and New Mexico, due chiefly to the relatively larger quantities of total gas associated with the oil per barrel of recoverable reserves and the resultant inherently and unavoidably higher operating gas-oil ratios. It is estimated that the total original gas in place (including dissolved and free gas) per barrel of recoverable oil reserves averages between 3,300 and 3,700 cubic feet per barrel for Louisiana and New Mexico, compared with about 1,800 cubic feet per barrel for Texas. In considering the apparent poorer showing of these States as against Texas with respect to operating gas-oil ratio, it is of paramount importance to understand that only a small proportion of the Texas wells are located in fields having relatively large gas caps and accordingly large quantities of gas per barrel of oil, whereas the situation is just the opposite in Louisiana and New Mexico. Accordingly the minimum practical operating gas-oil ratios are correspondingly higher in Louisiana and New Mexico.

The Louisiana regulation makes a general maximum gas-oil ratio restriction for the State to the amount of gas, at 3 cents per thousand cubic feet, equivalent to the value of the oil per barrel. At $1 oil this amounts to a maximum ratio of approximately 33,000 cubic feet per barrel. Special limits of 2,000 and 4,000 cubic feet per barrel are set for several fields. Until recently the New Mexico regulation did not specifically provide a maximum gas-oil ratio restriction, although active cooperation has always existed between the Conservation Commission and the operators in a common effort to control the production of gas with oil. The operators have pursued a program of corrective work continually over the past several years in order to control gas-oil ratios. While these efforts have not entirely solved the problem, they definitely have arrested a steady increase in the produced gas-oil ratios which normally would have occurred had the work not been done. In an effort to effect any possible further improvement, the operators and conservation authorities of New Mexico have been engaged for several months in a survey and study of every field in the State to determine the feasibility of additional corrective measures. The result of this work has been the establishment of maximum permissible gas-oil ratio limits in all of the important and flush production fields of the State. The limit set for any field depends upon the operating conditions in the particular field, and the limits vary between fields from 1,500 to 10,000 cubic feet per barrel. These limits operate to penalize the allowable production of high gas-oil ratio wells, and it thus encourages the operators to keep the wells in as good operating condition as possible. Under this regulation it is estimated that the average gas-oil ratio for the flush fields in the State is approximately 2,600 cubic feet per barrel. Accounting also for the low gas-oil ratio stripper production, the over all gas-oil ratio for the entire State is substantially lower than this figure. It is believed that the gas-oil ratios are being held fairly close to the practical minimum for operating conditions typical of New Mexico.

In spite of the corrective measures that have been taken by the members of the industry and the conservation authorities in Texas, Louisiana, and New Mexico under conservation statutes, there is avoidable waste of gas occurring in a number of fields in Texas and Louisiana. However, as previously mentioned, the question of gas waste involves what is and what is not reasonably preventable waste. The prevention of a great deal of the gas waste is a far more difficult problem than the prevention of the waste of oil, and it is often difficult to decide properly on just what part of the gas waste is reasonably avoidable from the standpoints of both its production and utilization. The practical problem of handling gas after it reaches the surface of the ground is much more involved than that for oil. Furthermore, its chemical and physical nature makes its utilization, except directly for fuel and lighting, so intricate that technical advance has not been able to register as much progress in this direction for gas as for oil. Nevertheless, progress has been and is being made in both handling and utilization. In many "distillate" fields, recycling operations have been and are being inaugurated; and, where some of the gas withdrawn for "stripping" or removal of condensible constituents was formerly blown to the air or burned, it is now in many cases being returned to the reservoir. Progress has also been made in utilization of more of the constituents of gas, such as propane and butane, which a few years ago had no use. These compounds are being recovered and utilized in cases where it is feasible to do so. All of these circumstances, involving its utility in addition to the difficulties in many instances of controlling its production, make the matter of placing a quantitative measure on the reasonably avoidable waste of gas a very difficult one.

B. *The present extent of avoidable gas waste.*—The waste gas flares seen throughout the oil territory provide a spectacle, particularly at night and particularly if the gas is gathered from a number of sources and burned at one point, which calls to mind waste that actually may not necessarily be reasonably preventable waste in any sense of the word. In view of the necessity, previously discussed, of producing the dissolved gas as well as perhaps additional reasonable quantities of free gas to effect efficient recovery of oil, the gas produced under such conditions may not properly be considered as wasted, even though no market may be available for its further utilization. In many of the oil fields in the territory under consideration, covering a major portion of the production, there is no preventable waste of gas, due to the low gas-oil ratios obtaining. Furthermore, there is no waste of gas from the purely "dry" gas fields, for there is no reason to produce gas from such fields except in such amounts as are required for the domestic and industrial uses already mentioned. On the other hand, there are some "distillate" wells and fields and oil fields having thin producing sections with large gas caps in which excessive and avoidable waste does occur in substantial amounts. It is in this type of field that most of the avoidable waste of gas occurs. However, definite progress is being made in preventing the gas waste in these cases through inauguration of recycling operations and gas return operations in the instances where it is feasible to do so. The number of such operations is growing steadily.

With the regulation now in effect in New Mexico for gas-oil ratio limitation, there is very little, if any, reasonably avoidable waste of gas of any kind occurring in that State. Quantitative information is not complete specifically on the reasonably avoidable waste of gas in Texas and Louisiana. On the Panhandle area of Texas rather complete data are available, and they show that the waste of gas has been reduced, since enactment of Texas H. B. 266 in May 1935 until it now is but approximately 2 percent of the total daily withdrawal from the field, which, as stated by Miller and Shea in their testimony[2] before this committee, is "almost to a practical minimum." Elsewhere in Texas and in Louisiana it is known that there are a number of oil fields and so-called distillate wells and fields, yet few comparatively that are producing and wasting inordinate amounts of gas. Both the members of the industry and the conservation bodies have been making continued progress in curbing such avoidable gas waste. In fact, there is an increasing emphasis being laid upon corrective measures in this respect.

UNDERGROUND WASTE OF OIL

Underground waste of oil may be said to occur when any operating practice is employed which will result in an ultimate recovery less than the original total recoverable reserve. As previously stated, underground waste is caused by the following improper operating conditions:

1. Excessive rates of production, either for the field as a whole, individual wells, or localized areas—permitted directly or caused indirectly through: (*a*) Improper allocation, (*b*) unnecessary drilling or too close spacing of wells.
2. Excessive production of gas and water.
3. Improper mechanical condition of wells.

The last item above has already been discussed.

No regulation exists in Texas, Louisiana, or New Mexico expressly for the purpose of controlling the production of water, although the statutes provide for rules governing completion practices and plugging to control water and prevent drowning of productive formations. It is believed that there are only a very few cases where such regulation may be necessary. The most notable is the East Texas field, and in this instance the Railroad Commission is actively studying the matter with a view to working out suitable control. Ordinarily the trouble and expense of handling salt water provide sufficient incentive for operators of their own accord to eliminate all preventable waste of this nature. As a matter of fact the production of some water along with the oil is necessary for the most efficient recovery in the latter stages of exhaustion. Its production is particularly advisable in those fields such as the Hendricks, Darst Creek, and Salt Flat in Texas where, due to the extreme effectiveness of the water drive, no material loss in reservoir pressure attends the production of water in great quantities.

The interrelation between the production rate of a field as a whole and all of the other causes of waste has already been fully covered. With few exceptions improper control of production rates is the primary cause of underground waste of oil in the territory under consideration. However, the improper control of production rates is largely the result of improper allocation formulae, both between fields and properties, and unnecessarily close spacing of wells. The problems of allocation between properties and of well spacing in New Mexico are well taken care of, as the statutes expressly provide for allocation units and pooling of small tracts. As a matter of fact, in New Mexico practically all of the spacing is on the basis of 40 acres per well, and regulation requires that the size of the allocation unit in Lea County, wherein most of the reserves are located, be 40 acres. These problems in Louisiana have not been as well taken care of as in New Mexico. However, even though the Louisiana commission has not actually regulated the spacing in many fields, most of the fields discovered within the last 3 or 4 years have been developed on a spacing of 20 acres per well or more. The problems of allocation and well spacing have been particularly bothersome in the past in Texas, but considerable progress in their solution has been and continues to be made.

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[2] Ibid, pp. 401–405.

The trend of well spacing in Texas as indicated by orders issued by the Commission over the past 6 years is shown in table II. Whereas table II shows that but 27.2 percent of the special field orders issued in 1934 called for spacing of 20 acres or more per well, 80.5 percent of the orders for 1939 specified a spacing of 20 acres or more per well. Prior to February 1, 1940, the State-wide spacing rule for Texas, in the absence of special orders for individual fields, was 150 feet from lease lines and 300 feet between wells, the equivalent of 2.06 acres per well. Of course, in most cases this State-wide rule has been superseded by special spacing rules for the individual fields promulgated after open hearings and calling for considerably wider spacing than was required by the State-wide rule, as indicated in table II. Effective February 1, 1940 the Commission issued a new State-wide well-spacing order of 20 acres per well which superseded the old above-mentioned State-wide order and applies to future development as well as to those fields already developed or under development for which special spacing rules have not been issued. It does not apply to fields for which special spacing orders have been promulgated, and it does not preclude the issuance of special spacing rules for any individual field. The present State-wide spacing rule will facilitate control of well spacing and elimination of unnecessary drilling, as it is immediately operative upon discovery of the field and will in many instances remove any need for issuance of special spacing orders for the individual field.

With reference to the problem of allocation of allowable production in Texas, it may be said that if the allocation were always placed on the proper basis, the well-spacing problem would almost automatically cease to exist. That substantial progress has been made in meeting this difficult problem, involving a multiplicity and diversity of private interests, is shown by the fact that the percentage of field rules issued by the Railroad Commission of Texas, in which the allocation has been based upon at least 50 percent acreage has increased from 61 percent in 1937 to 93 percent in 1938 and to 98 percent in 1939.

MISCONCEPTIONS OF DEGREE OF UNDERGROUND WASTE OF OIL

As previously explained, underground waste relates to the physical efficiency or extent of oil recovery. There has been a great deal of misconception in the past concerning the efficiency of oil extraction by the methods normally used by the industry. It has been glibly charged on many occasions in the past that a large part of the oil is left unrecovered in the reservoir and that the operations are therefore very wasteful at best. With the additional knowledge of underground conditions, which has been gained during the past 3 to 5 years, an entirely different light has been thrown on the efficiency of oil recovery by our ordinary operations. It is now known that even with the comparatively wasteful wide-open conditions under which fields were produced in the past, a considerably greater percentage of the oil was actually recovered than was previously commonly thought. This materially changed conception of the degree of efficiency of oil extraction under the old wide-open operations is discussed by Miller [3] and Shea in their testimony. Furthermore, it now appears that under properly controlled operation a very high efficiency of extraction can be and is being realized.

The misconceptions of recovery efficiency were caused by (a) the fact that connate water occupies an appreciable portion of the pore spaces throughout the reservoir and less oil is present originally than formerly believed, and (b) failure to appreciate that the gas dissolved in the oil under reservoir conditions occupies an appreciable volume and that the oil shrinks as the gas is released from solution during the process of recovery. The quantity of water found in the pore spaces even in the midst of the oil-bearing section of the reservoir may vary widely, depending largely on the permeability of the rock, and may fill as little as 10 percent of the pore volume of very permeable sands up to very high percentages for sands of low permeability. It is common to find half of the pore space filled by water and only half filled by oil. The water exists as a film adhering to and covering the pore surfaces of the rock, leaving the oil free to move within water-jacketed pore spaces.

The shrinkage suffered by oil due to release of its dissolved gas during the course of the production operations has been determined in a number of cases by laboratory examination of actual samples of reservoir oil and gas. The amount of shrinkage depends upon the quantities of dissolved gases released and may vary from a few percent up to as high as 30 percent or more. The shrinkage averages between 15 and 20 percent for a large number of Texas, Louisiana, and New Mexico oils.

The oil yields obtained from fields produced under wide-open conditions which are depleted or nearly depleted in Texas, Louisiana, and New Mexico commonly indicate recoveries ranging between 500 and 900 barrels per acre-foot of productive oil section, particularly from fairly permeable sandstone reservoirs which were subject in their later life to some water drive. An average yield of 700 barrels per acre-foot, considering 25 percent porosity and failing to account for connate water saturation and shrinkage, would lead one to conclude that only 36 percent recovery was obtained if it were believed that the pore volume was originally filled entirely with oil. If it were known that the connate water saturation actually happened to be 25 percent and the shrinkage 15 percent, the conclusion would be quite different, as the yield would really amount to 57 percent of the total oil originally in place. Considering further the fact that a quantity of oil equivalent to a minimum of 15 percent of the pore space is unrecoverable by any practical operation even under the most favorable circumstances, the efficiency of extraction of what may be termed the recoverable oil in place was approximately 70 percent under the early day wide-open operation.

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[3] Ibid pp. 380–384.

ESTIMATE OF MAGNITUDE OF EFFECT OF PRODUCTION RATE ON WASTE

The figures [4] quoted in the foregoing are believed to be reasonably representative of the recoveries realized in a number of fields typical of the territory under consideration when produced under wide-open flow. Experience shows that wide-open flow was equivalent to a maximum rate during the early life of such operation of about 25 percent of the original reserve per year. As the recoveries obtained under these conditions seem to have averaged approximately 70 percent of the recoverable oil, it thus appears that waste of the order of 30 percent of the recoverable oil was committed at a production rate equivalent to 25 percent yearly of the original reserve. Conversely, fields which are found to be producing at a high degree of efficiency with respect to extraction of the oil are found to be producing a relatively small percentage annually of their developed original reserves. Experience in many such instances indicates that the recovery closely approaches 100 percent of the recoverable oil under efficient operating conditions as defined herein. It is recognized that there may be exceptions differing appreciably from the average experience, but, on the average it appears that, as between a fully efficient production operation and the most wasteful (wide-open flow) operation, there is a range of approximately 30 percent difference in the amount of the original recoverable reserve actually extracted by ordinary operating methods in the territory under consideration here. The actual quantitative effect of production rate on efficiency of oil extraction, or conversely waste, through this range between the best operation and the poorest operation is not known.

Hence, it is not possible to determine accurately the amount of waste actually occurring under current operations in the States of Texas, Louisiana, and New Mexico. The deductions concerning the 30 percent range or difference in waste between the best and poorest operation would seem, however, to provide a reasonable basis upon which to estimate a reasonable approximation of the probable relationship between production or depletion rate and percent of original recoverable oil wasted. This provides a means of making what is believed to be a dependable estimate of at least the order of magnitude of waste of the original recoverable reserve as affected by rate of production. It must be emphasized that such an estimate is by no means precise, but it is significant and helpful at least to the extent that it reveals the order of magnitude of waste.

MAGNITUDE OF UNDERGROUND WASTE OF OIL

On the basis of the above discussed average relationship between rate of production and waste of recoverable oil, a study has been made of all producing oil fields in Texas, Louisiana, and New Mexico, with a view toward determining the extent of waste, if any, in each, taking into consideration the original reserves and the current rate of production. The results of the study are set forth in table III below which presents also data for each of the three States on total original recoverable reserves, total remaining reserves, and total production rate of the fields now producing. The estimates of the total underground waste of oil in Texas, Louisiana, and New Mexico which will ultimately be sustained under continuance of the current rates of production now in effect in the various fields are given as a percentage of both the original and remaining reserves:

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[4] The examples cited here are for typical sand reservoirs. It is difficult to give comparable data for limestone reservoirs due to irregularities in the porosity of that type reservoir. However, it is believed that the efficiency of recovery from limestone reservoirs is at least as high as for typical sand fields.

TABLE I.—*Gas-oil ratio regulation—Texas fields, December 1939*

Gas-oil ratio limit	Fields affected	Wells affected	Allowed production: B/D	Penalties: B/D	Gas saved MCF/D
500	1	0			
1,000	2	9	43	115	230
1,500	7	0			
2,000	69½	621	13,906	11,717	89,422
2,500	2	18	350	477	2,855
3,000	5	290	4,075	1,487	7,750
3,500	1½	126	3,280	4,468	15,700
5,000	11	212	2,798	1,131	17,206
8,000	1	3	52	24	200
10,000	6	53	955	1,414	29,597
Total	[1] 106	[1] 1,332	25,459	20,833	162,960

[1] Only 92 fields are actually affected but all fields are covered by regulation, and there are 14 fields, having special orders differing from the 2,000 State-wide limit, in which no wells are actually affected.

TABLE II.—*Trend of well spacing orders issued by Railroad Commission for Texas fields*

Year	Acres per well											Total	Range of acre/well	
	2.08	4.5	5	8	10	15	16	17.8	20	35	40		2.08–20	20–40
	Number of fields												Percent of total	
1934					8				3			11	72.7	27.2
1935	1				12		1		4			18	77.8	22.2
1936		1	2		9				6			18	66.7	33.3
1937			1		19			2	10		4	36	61.1	38.9
1938		1		1	3	3		2	18	1		29	34.5	65.5
1939					7			1	25	2	6	41	19.5	80.5
Total	1	2	3	1	58	3	1	5	66	3	10	153		
Percent	0.65	1.31	1.96	0.65	37.92	1.96	0.65	3.27	44.14	1.96	5.53		48.4	51.6

TABLE III

State	Estimated reserve (billion barrels)		Total daily production [1] (barrels)	Percent ultimate waste of—	
	Original	Jan. 1, 1940		Original reserve	Remaining reserve
Texas	17.34	11.18	1,411,000	0.38	0.47
Louisiana	1.89	.92	265,000	2.1	3.1
New Mexico	1.05	.81	110,000	.32	.36
Total territory	20.28	12.91	1,786,000	.54	.65

[1] December 1939.

It is to be noted that the ultimate waste, assuming continuance of current operating conditions, amounts to but 0.38 percent of the original reserve in Texas, 2.1 percent of the original reserve in Louisiana, and 0.32 percent of the original reserve in New Mexico, giving an over-all average for the territory as a whole of 0.54 percent. One is impressed with the fact that, in each State, these estimates show the waste of oil to be but a small fraction of either the original or remaining total recoverable oil reserves. This is of particular significance in view of the fact that the territory under consideration here accounts for approximately 64 percent of the national total current known oil reserve.

SUPPLEMENT TO STATEMENT BY RALPH J. SCHILTHUIS, PRESENTING ANALYSIS OF AND ANSWER TO REPORTS FILED WITH COLE SUBCOMMITTEE ON FEBRUARY 8, 1940, BY UNITED STATES DEPARTMENT OF THE INTERIOR ALLEGING PHYSICAL WASTE IN TEXAS, LOUISIANA, AND NEW MEXICO

INTRODUCTORY REMARKS

The allegations of physical waste in the reports filed by the Department of the Interior involve principally waste of natural gas. In considering the question of gas wastage, distinction must be made between avoidable waste and unavoidable waste. It must be remembered that the production of a certain amount of gas with the oil is an unavoidable incident to the production of oil. Often it is impractical either to save such gas or to utilize it for some domestic or industrial purpose. Avoidable gas waste should refer only to (*a*) that gas permanently withdrawn from essentially gas or "distillate" wells or fields in excess of amounts put to domestic or industrial uses, and (*b*) that gas produced with oil in excess of quantities reasonably necessary to the production of the oil and which is not also ultimately consumed for domestic or industrial purposes. In the main part of my prepared statement, I have discussed more fully the principles that should be considered in the determination of avoidable gas waste. Any consideration of specific charges of gas waste should take these principles into account. An understanding of them is essential to the appraisal of the specific instances of waste cited in the statements filed by the Department of the Interior.

On the following pages, I have taken up briefly the principal allegations of waste cited in the Interior Department's reports, and I am presenting a picture of my understanding of the conditions that actually surround these instances.

ANALYSIS OF THE REPORTS

Exhibit A, prepared by United States Geological Survey

1. On page 3 it is stated that 60 million cubic feet of gas was being blown into the air daily in the Eunice field, New Mexico, at the time of preparation of the report. While this is true, the waste cannot be branded as avoidable waste, for the field is an inherently high gas-oil ratio field, the ratio averaging 5,653 cubic feet per barrel. The maximum permissible gas-oil ratio set by the conservation commission is 7,000 cubic feet per barrel which is believed to be a reasonable practical minimum for the high ratio wells, under the physical conditions of operation existent in the Eunice field.

2. On pages 7–9, the waste of gas in the Rodessa field in Louisiana is discussed. Serious gas waste has occurred at Rodessa, but it is admitted in the report that the wastage has been greatly reduced as a result of orders of the conservation commission fixing a gas-oil ratio restriction of 2,000 cubic feet per barrel and prorating the allowable on a 50 percent acreage and 50 percent bottom-hole pressure basis.

3. On pages 10–12 alleged waste of gas in New Mexico is considered. An estimate is made that 200 million cubic feet of gas daily is wasted in Lea and Eddy Counties, about half of which is not processed for extraction of gasoline. Practically none of this waste is avoidable, as it is produced from inherently high gas-oil ratio fields as an unavoidable incident to the production of oil. The conservation commission fixes maximum gas-oil ratio limits in every field in these counties, and in only the Cooper field can it be said that avoidable gas waste occurs in excess of the limit set. In this field the avoidable gas waste amounts to about 5 million cubic feet daily. However, even in this case, considering the water produced with the oil, the gross gas-fluid ratio is only about 700 cubic feet. Regarding the alleged waste of natural gasoline through failure to process about half of the gas, it is economically impractical to process a large part of the gas referred to on account of its low gasoline content. It is admitted in the report that the gasoline content of the gas varies appreciably from field to field. In some cases, it is feasible to extract gasoline from comparatively lean gas if the residue gas can

be marketed. However, where markets for the residue gas cannot be found, it is often economically impractical to gather and process gas except in cases where it has relatively high gasoline content.

Exhibit B, prepared by United States Bureau of Mines

1. On pages 33–36 waste of gas is alleged in various fields in Louisiana. In the Louisiana part of the Rodessa field it is said that 22,000 barrels daily of oil was produced during November 1939 at an average gas-oil ratio of 3,600 cubi feet per barrel, which gives a daily gas production of 79 million cubic feet. Of this it is stated that 52 million cubic feet daily was blown to the air, the remaining 27 million being utilized. Considering that 1,500 is a reasonable minimum gas-oil ratio in this case, the unavoidable gas production is 33 million cubic feet, which, added to the 27 million utilized and this total then deducted from the total gas produced leaves but 19 million cubic feet as avoidable waste instead of the 52 million alleged. The avoidable gas waste expressed in terms of oil produced is about 860 cubic feet per barrel. Furthermore, a large part of the gas produced is processed to recover its natural gasoline content.

In the Shreveport field it is stated that gas-oil ratios of the wells range from 407 to 22,640 cubic feet per barrel, but no estimate of the total gas waste is made. The conservation commission fixes a gas-oil ratio restriction of 4,000 cubic feet per barrel in this field and penalizes the allowable production of high ratio wells. As most of the gas produced is processed to remove natural gasoline and as a part of the residue gas is utilized, it is likely that the avoidable waste is small.

At Cotton Valley it is said that gas-oil ratios of the wells range from 675 to 19,600 cubic feet per barrel, and that all of the gas is vented. The average produced gas-oil ratio is believed to be about 2,500 cubic feet per barrel. Considering that a 2,000 ratio is a reasonable unavoidable minimum, the excessive gas production is but 500 cubic feet per barrel.

For the Lisbon field the statement is made that the gas-oil ratios vary from 200 to 2,000 cubic feet per barrel and are not excessive. However, waste is intimated because the gas is vented. This, of course, cannot be designated as avoidable waste.

In Louisiana Gulf Coast fields, the observation is made that gas is being vented to the air in 50 out of 79 fields which account for virtually all of the oil production. Of these it is said that gas-oil ratios are 2,000 cubic feet per barrel or more in 13 fields, 4,000 or more in 6 fields, and range between 11,000 and 30,000 in 4 fields. It was not explained, however, that the fields having gas-oil ratios above 2,000 involve only approximately 19 percent of the current oil production and that those having ratios above 4,000 involve less than 7 percent of the oil produced in this area.

Waste of gas is cited in the South Roanoke or Lake Arthur field, which is an abnormally high pressure (7,350 pounds per square inch) distillate field and which alone accounts for about 25 percent of the estimated avoidable gas waste in the Louisiana Gulf Coast area. It is pointed out that compression equipment is not immediately available to handle gas for recycling under such high pressures. Other fields in which gas waste is alleged specifically but no estimates given of the amounts are Abbeville, Bancroft, De Large, Quarantine Bay, Roanoke, Vecherie, and Woodlawn. Personally, it is believed that the fields specifically mentioned do account for over 75 percent of the avoidable gas waste occurring in the Louisiana Gulf Coast fields. The total avoidable gas waste of this area, however, does not exceed about 13 percent of the total gas currently produced in the area and does not constitute an alarming situation.

2. On pages 37–40 waste of gas and casinghead gasoline is alleged in certain fields in New Mexico. An estimate is made that in Lea County at least 200 million cubic feet of gas is blown to the air or burned daily out of a total production of 340 million daily. Also it is said that only about half of the gas is processed to remove gasoline. In considering what constitutes avoidable gas waste in New Mexico, it must be remembered that the oil is associated with relatively large quantities of gas and accordingly is produced with inherently and unavoidably high ratios. With the gas-oil ratio limitations now in effect, it is believed that the production of gas is being controlled close to the unavoidable minimum, considering the physical conditions associated with the operations in New Mexico.

Regarding the allegation of waste of natural gasoline as a result of failure to process some of the gas, attention has already been directed to the fact that the reports did not give proper consideration to the practicability of recovering the gasoline from that gas not processed. It is economically impractical to process a large part of such gas on account of its relatively low gasoline content, coupled with the fact that no market exists for the residue gas.

3. On pages 50-71 conditions in Texas with respect to alleged waste of gas, undue dissipation of reservoir pressure in "distillate" fields, and underground loss of oil due to faulty well completions and water encroachment are discussed.

On page 51 a list is given of a number of fields which contain wells having gas-oil ratios in excess of the gas-oil ration limit set for the particular field. It is admitted, however, that the allowable production of such wells is penalized to permit them to produce only on a volumetric parity with the gas-oil ratio limit set.

Waste of gas is charged in the early stage of development of fields in the Corpus Christi area to the extent that it is said operators are seeking to obtain gas with which to produce the remaining oil. It is undoubted that gas waste has occurred in the past in this area, but it has been reduced substantially in most cases. The statement that improper operating practices have resulted in "blow-outs" is purely a matter of conjecture.

Loss of considerable hydrocarbons in "distillate" fields as a result of waste of gas and consequent undue decline in reservoir pressure is alleged in the La Blanca, Old Ocean, and La Belle fields, while it is stated that maximum recovery of condensible constituents is not being obtained under the recycling operations in effect in the Grapeland field. Waste of gas is occurring in the Old Ocean and La Belle fields, but there is no current gas waste in the La Blanca field.

At Old Ocean difficulties are being experienced in handling the gas under the high pressure involved. It is believed that the avoidable gas wastage at Old Ocean currently amounts to about 220 million cubic feet daily, which accounts for over half of the estimated total avoidable gas waste presently occurring in the State of Texas. It is understood that steps are being taken to eliminate the gas waste at Old Ocean. A representative of the principal operator in the field has stated that by the time the report of this committee is filed, preparations will have been completed for returning all of the gas produced to the reservoir. Mr. Elwood Fouts, attorney for the principal operator, has testified before the committee to this effect.

At La Belle an unavoidable failure of equipment is the basic cause of the waste there.

At La Blanca it is stated that earlier waste of gas has unduly lowered the reservoir pressure to the extent that a considerable portion of the valuable constituents of the gas have condensed in the reservoir and thus been lost. It is stated that at least 65 percent of the liquefiable constituents of the gas will condense in the reservoir and not be recovered. It is believed that the loss has been greatly over-estimated through misinterpretation of the effect of pressure reduction on condensation within the reservoir by the article quoted as authority on this particular case. The basis chosen to illustrate the loss by condensation in the reservoir is the decline in the recovery of condensate obtained at the surface as a result of decline in reservoir pressure. This is not a true measure of the loss by condensation in the reservoir. It is estimated that the actual loss by condensation in the reservoir as a result of reduction in reservoir pressure is less than 50 percent of the losses quoted in the article. At present all residue gas is being returned to the reservoir in the La Blanca field, and hence there is no waste occurring in this field.

In connection with the apparent lack of complete recovery of condensible constituents under the recycling operation at Grapeland, it may be that the discrepancy between the actual recovery obtained and the possible recovery indicated by analysis involves merely the difference between the maximum total gross volume of constituents condensed at the optimum condition and the net volume remaining upon weathering to atmospheric pressure. Attention is directed to the fact that it is impossible to effect complete recovery of all of the constituents indicated by analysis, particularly the light components such as butane, even under the most favorable circumstances. Furthermore, in view of the fact that substantially all of the residue gas is returned to the reservoir, any condensate not extracted is also returned and is not therefore lost. Therefore this is really an example of conservation rather than waste.

Waste of gas during 1938 is cited in the Long Lake field, but it also stated that recycling operations were expanded during 1939 so that at present 75 million cubic feet of residual gas per day are being returned to the reservoir.

The waste of gas from the Woodbine reservoir of the Cayuga field in 1938 is given as 6 million cubic feet daily produced with oil from oil wells. No waste occurred from the Trinity reservoir. Current information indicates that the current total waste of gas from this field is about 7½ million cubic feet daily.

Underground loss of oil in the Yates field through its escape to extraneous formations due to poor casing and cementing jobs is cited. While substantial waste of oil admittedly has occurred in this case, it cannot be branded as due to carelessness, for it was largely the result of early inexperience. Most of the waste occurred through a very few of the early wells and was effectively prevented in all of the other wells as more knowledge and better technique developed. As intimated in the Interior Department's report, the offending wells have long since been repaired and the waste stopped. Furthermore, more than 3 million barrels of the seepage oil has been recovered through salvage operations. It is difficult to see how avoidable waste can be charged in this case.

Mention is made of the possibility of physical and economic losses through irregular water encroachment as a result of too rapid production. The fundamental soundness of this proposition in the general case is undeniable. However, the Hendricks field is given as an example where rapid development and withdrawals cause large volumes of water to appear early in the life of the operation, resulting in high operating costs. It is questionable that this was actually the case at Hendricks, for the extreme effectiveness of the water drive maintained the reservoir pressure in the face of the rapid production rates and permitted recovery of a large portion of the oil under flowing conditions. On account of the extreme effectiveness of the water drive at Hendricks, this is believed to be one of the few instances where it is desirable to produce large quantities of water and take advantage of its flushing action to effect high recovery. Moreover, attention is directed to the fact that this field was developed and most of the oil produced prior to 1930 and prior to our present conception of the best operating practices. Hence, in view of this and the fact that the field is now in the stripper stage, water production will enhance rather than diminish the ultimate oil recovery. Therefore, the case cannot be cited as an example of current waste.

On page 62, it is stated that 715 out of the 3,419 wells in the Texas Panhandle were producing with gas-oil ratios from 5,000 to 100,000 cubic feet per barrel in April 1938. I should like to point out that the gas from wells of this character, except those in isolated areas, is processed for its gasoline content and subsequently either used in the manufacture of carbon black or delivered after compression into the various gas pipelines. Furthermore, inasmuch as the Panhandle field constitutes predominantly a large gas field containing a relatively small amount of oil, the withdrawal of gas from high-ratio oil wells is more efficient than the withdrawal of the gas from gas wells. Hence, the operation cannot be charged with either surface waste or underground waste, except where it can be shown that gas from the isolated wells mentioned is needlessly blown to the air. The waste of gas in the Panhandle is stated to amount to approximately 2 percent of the total quantity of gas currently produced in that area. The committee will recall that Miller and Shea of the Bureau of Mines, in their testimony before this committee, stated that this constituted almost a practical minimum.

A picture of the over-all gas wastage in Texas is presented on the basis of data compiled by the Railroad Commission of Texas on gas production and its ultimate disposition. These data show the waste to be approximately 10 percent of the total reported gas production of the State. This figure is believed to be essentially correct even though the compilation from which it was obtained is not complete and does not properly make distinction between that part of the gas wastage which is avoidable and that which is not reasonably avoidable. As stated before, in considering the question of gas waste, avoidable gas waste should refer only to (*a*) that gas permanently withdrawn from essentially gas or "distillate" fields in excess of amounts put to domestic or industrial uses, and (*b*) that gas produced with oil in excess of quantities reasonably necessary to the production of the oil which is not also utilized for domestic or industrial purposes.

The current avoidable gas wastage in Texas, expressed as equivalent market value in terms of crude oil, is approximately 8,000 barrels per day, the gas being valued at 2 cents per 1,000 cubic feet. This is less than 0.6 percent of the current total daily crude-oil production of the State. The figure of 2 cents per 1,000 cubic feet is used because it represents somewhere near the average price of natural gas sold at the well in Texas and therefore represents a measure of its maximum present utility. If a figure of 3 cents per 1,000 cubic feet were used, the waste equivalent in terms of oil would still be under 1 percent of the present total daily crude-oil production of the State. It should be borne in mind, however, that there are limited markets for gas, and little if any of this gas can be marketed at any price.

With the application of recent advances in the technique for injecting stripped gas into high-pressure "distillate" reservoirs, the avoidable waste of gas in Texas should be reduced substantially within a short time.

Exhibit C, prepared by Petroleum Conservation Division

1. Pages 1–6 contain data compiled from forms filed by producers with the Louisiana Department of Conservation on production and disposition of gas pro-

duced from oil wells in Louisiana. The data for August 1939 show that for the 86.2 percent of the total oil production of the State that reported gas production, the average gas-oil ratio was 1,747 cubic feet per barrel. About 64 percent of the total gas produced was utilized and 36 percent wasted or unaccounted for. No effort was made to consider what part of the 36 percent was actually avoidable waste. A personal estimate indicates that the avoidable waste in Louisiana amounts to but about 13 percent of the total current gas production.

Comment is made on the existence of several individual wells possessing high gas-oil ratios, the production data on which indicate that they exceed the State-wide gas limitation of that amount of gas valued at 3 cents per 1,000 cubic feet equivalent to the value of the oil.

Comment is also made that a number of operators fail to report gas production on their production reports to the Commission or often report "no gas produced." Specific instances are cited among which is the case of the Lake Washington field, operated by Humble Oil & Refining Co. It is commented that due to the preponderance of flowing wells, it is probable that large quantities of gas necessarily are produced with the oil, although no gas production was reported. As a matter of fact, the Lake Washington oil is low gravity (18° A. P. I.) and is produced with only its dissolved gas, which amounts to approximately 20 cubic feet per barrel. The field is acted upon by a powerful water drive and the reservoir pressure is at substantially its original value even though the field is approximately 50 percent depleted. Several of the other fields listed also have very low gas-oil ratios.

2. Pages 6–10 show data taken from compilations by the Texas Railroad Commission on the production and disposition of natural gas in Texas and in certain specific fields. For November 1939, it is indicated that about 11 percent of the total gas production reported was wasted. As stated before, this figure is believed to be substantially correct despite the fact that the compilation is neither complete nor does it properly distinguish between avoidable and unavoidable gas wastage. It is stated in the Interior Department's report that the indicated total quantity of gas vented to the air exceeds 1 billion cubic feet daily, but no attempt is made to ascertain what part of this can be designated as economically avoidable waste, considering the practical aspects of the operations. My estimate of the total avoidable gas waste in Texas is approximately 400 million cubic feet daily which, as previously stated, is approximately 10 percent of the total daily gas production and is the equivalent in value of but 0.6 percent of Texas' total daily oil production. I would like to repeat that over half of this waste occurs in one field and that preparations are being made which should bring about a substantial reduction in the avoidable waste within a short time.

On page 7 estimates of gas wastage at Old Ocean are given for the period January–October 1939, indicating that the waste currently approximates 200 million cubic feet daily. As mentioned previously, it is believed that this one field currently accounts for about half of the estimated total avoidable gas waste of the entire State of Texas, but steps are being taken to stop the waste in this case.

On page 10 data are given on the gas production from the La Belle field for the period April 1938–March 1939, indicating a daily average for the period of about 70 million cubic feet. More recent information indicates that the current wastage is about 5 million cubic feet daily. As previously stated, the basic cause of the gas waste in this field is an unavoidable equipment failure.

3. Pages 11–13 contain data on gas production in 1938 of the several fields in Lea County, N. Mex., and information on the proportion of the total gas produced which is treated for gasoline extraction. It is charged that about 300 million cubic feet of gas was vented daily during 1938 and that 59 percent of the total gas produced was not processed to remove gasoline. The above estimate of the waste does not consider the gas unavoidably produced as an incident to oil production, which should not be considered as avoidable gas waste. Under the gas-oil ratio limitations now in effect in New Mexico and properly accounting for the gas unavoidably produced with oil, it is believed that avoidable gas waste is currently being held to a reasonable minimum, considering the difficulties attending gas-oil ratio control and other physical aspects of the operation in the character of fields in New Mexico.

Regarding the charge that 59 percent of the gas produced in New Mexico is not processed for gasoline extraction, it is again pointed out that the gathering and processing of gas is often not economically possible, particularly in this instance, for the reasons previously given herein.

CONCLUDING REMARKS

As is pointed out somewhat in detail in my main statement (pp. 5–9), the problem of gas production, handling, and utilization is an intricate, complicated, and difficult one. Without undue repetition of the statements made there, I would like to call attention again to the fact that gas cannot be successfully stored above ground to await markets. Moreover, in the areas here under consideration, the available markets are already being supplied. The producing fields are scattered over a great expanse of territory, often remote from any centers of population or industrial activity. Attempts to provide transportation of gas to distant markets are not at present justified by any reasonably expected return. In many instances, the gas produced is not in sufficient volume or richness to justify the construction of gasoline extraction plants or other facilities for handling the gas for any purpose. A large part of the gas produced in New Mexico, west Texas and some other areas is "sour," having high content of sulfur compounds, and is therefore less desirable for processing for extraction of gasoline or for utilization as fuel. Furthermore, as explained in the main statement, in most cases where gas is produced with oil, its return to the indigenous reservoirs is neither economically feasible nor sound from the standpoint of obtaining the most efficient recovery of the oil. This last consideration is particularly true in active water-drive fields, which is the prevalent type generally throughout the three States involved here.

It will be seen that while it may be theoretically possible to prevent the venting to the air of all gas produced with oil, to do so is not practical economically nor feasible from the standpoint of efficiency and oil conservation. Furthermore, any attempt to bring this about would result in the closing down of many oil fields and in the reduction of oil production to only a fraction of the amount required to meet present consumptive needs.

Progress in the prevention of gas waste has been substantial. There is no waste of gas from "dry" gas fields. The control of oil-production rates and gas-oil ratios, improved technique in location of the separation between oil and gas zones through electric logging, proper setting of casing and packers, squeeze cementing, gun-perforation of casing and liners, and the return of gas to the indigenous reservoirs where feasible and practical—the adoption of all such advanced techniques, as increasing knowledge makes them available, is resulting in progressive advances in the saving of gas from oil fields. The rapid adoption of recycling operations, as technique improves, making such operations practicable, leads to the expectation of increasing progress in the prevention of waste in "distillate" fields. Such progress has already reduced gas wastage in the States here under consideration to the point where it is not now alarming; and, as progress continues at an advancing pace as a result of increasing technological improvement and constantly more effective regulation by the State conservation agencies, we may expect progressive reduction in avoidable waste of both oil and gas.

Mr. COLE. Your estimate of the oil recoveries during the past is different from some of the figures we have before us. It seems to me that you estimate considerably more than most people have estimated, do you not?

Mr. SCHILTHUIS. Yes, I do.

Mr. COLE. About double?

Mr. SCHILTHUIS. Yes; about double. It all comes about as a result of the earlier lack of a proper understanding of conditions underground, concerning the amount of oil that was originally in place. We now have knowledge of the fact that there is considerable water coexistent with the oil in the sand. Furthermore, we have a better knowledge now of the part that the gas, which is dissolved in the oil, plays in affecting our estimates of the percentage of oil recovery. The gas that is dissolved in the oil also occupies considerable space in the reservoir. When both of these considerations are taken into account, the percentage recoveries of the oil originally in place, even under the old, comparatively wasteful operations wherein we produced wide-open, are not nearly as low as was previously thought.

Mr. COLE. As a general proposition the figures given to this committee in the past indicated that we had recovered about 30 percent, actually. Is that not right?

Mr. SCHILTHUIS. I believe that is correct.

Mr. Cole. And your idea is that we have recovered about 60 percent?

Mr. Schilthuis. Sixty to seventy percent.

Mr. Cole. As high as 70 percent.

Mr. Schilthuis. Yes.

Mr. Cole. That we have actually recovered 70 percent of all the oil in place in this country.

Mr. Schilthuis. I would like to say——

Mr. Cole. Am I right in that?

Mr. Schilthuis. No; I do not believe you have the proper understanding of that.

Mr. Cole. All right.

Mr. Schilthuis. There is a certain amount of oil in the ground that is unrecoverable by any practical means. The only way it could be gotten out at all would be by mining, which is economically impracticable. Taking into account that amount of oil which is unrecoverable by any practical means, and further, taking into account the connate water that coexists with the oil in the sand, and also the space occupied by the gas which is dissolved in the oil, we obtain an entirely different picture as to what the percentage recoveries have been in the past or what they will be under our present operations in the future.

Mr. Cole. Is it fair to say, in view of your statement that 70 percent of the oil is recovered, that the quantity of oil remaining under the ground, as others have given this figure, is just cut in half?

Mr. Schilthuis. I think it would be more accurate to say that 70 percent of the oil that is recoverable by any practical means has been recovered out of those fields which were produced under wide-open flow.

Mr. Cole. Yes.

Mr. Schilthuis. There is probably an amount of oil left in the ground in those depleted fields which, expressed as a percentage of the total original amount of oil in the ground in such fields, is somewhat more than 30 percent; but, all of that oil is not recoverable by any practical means.

Mr. Cole. But, in reading your paper, I get this impression: I have been under the impression heretofore from the testimony before us, that the actual recovery was about 30 percent, and, therefore, the estimates of the ultimate reserves which would be produced in this country would be the remaining 70 percent. If we take your figures, we just reverse it, and the reserves of the country are about half of the amount witnesses have been telling us about. Is that not a fair deduction from your paper?

Mr. Schilthuis. No, sir; that is wholly incorrect. I think I can make it clear, if you will allow me to proceed with the reading of certain sections in the main paper that I think would be of interest to the committee in connection with the question.

Mr. Cole. All right. I thought that you were going to drop the paper and go on with the supplement.

Mr. Schilthuis. No, sir; I stated that I wished to read specific sections out of both, the main paper and the supplement.

Mr. Cole. All right. We will take a recess until 10 o'clock tomorrow morning.

(Thereupon, at 4:55 p. m., a recess was taken until tomorrow, Wednesday, February 21, 1938, at 10 a. m.)

PETROLEUM INVESTIGATION

WEDNESDAY, FEBRUARY 21, 1940

House of Representatives,
Subcommittee of the Committee on
Interstate and Foreign Commerce,
Washington, D. C.

The subcommittee met, pursuant to adjournment, in the committee room, New House Office Building, at 10 a. m., Hon. William P. Cole, Jr., presiding.

Mr. Kelly. In the temporary absence of Mr. Cole, who is engaged on other legislative matters this morning, regarding the railroad transportation bill, he has asked me to start this meeting. I was not here yesterday afternoon, as I was engaged also in other legislative matters. I understand that Mr. Schilthuis was on the stand, and we will hear further from him at the present time.

STATEMENT OF RALPH J. SCHILTHUIS—Resumed

Mr. Schilthuis. Mr. Chairman, I believe that the chairman asked a question as to what my estimate of the avoidable gas waste is in Louisiana.

Mr. Cole. Yes.

Mr. Schilthuis. In view of the chairman's presence now, I would like to say that my estimate of the avoidable gas waste in Louisiana is that it amounts to about 13 percent of the total gas produced daily, which at the figure you mentioned yesterday of 3 cents per thousand cubic feet——

Mr. Cole. That was your figure. That is in the law, is it not?

Mr. Schilthuis. That is the figure mentioned in my prepared statement as being the standard set up by the Commission by which they fix the State-wide limit for maximum permissible gas-oil ratio. As a matter of fact, I believe that the average value of gas at the well, in cases where it can be marketed, is about 2 cents per thousand cubic feet in my territory. Now, of course, that refers only to the gas that can be marketed. Much of the gas is scattered throughout this large territory, and it cannot be collected and marketed, and it is therefore worth practically nothing; however, at the figure of 3 cents per thousand cubic feet, the avoidable gas waste in Louisiana has the value of $3,000 a day, which in terms of the value of the total oil produced daily in the State is only 1.2 percent. At a figure of 2 cents per thousand cubic feet, the equivalent value of the gas waste in terms of oil is only eight-tenths of 1 percent of the total daily oil production of the State.

Referring now to the reports filed by the Interior Department on February 8, 1940, in my opinion, a great deal of the waste therein alleged in my territory cannot properly be designated as avoidable waste. In my supplemental statement, I take up in detail each of the important instances of waste cited in the Interior Department report for the area that I am covering, and I try to outline the reasons why most of them cannot properly be considered as constituting avoidable waste, as well as to point out the few cases where the waste could be considered avoidable.

Mr. Cole. Mr. Schilthuis, I want to clear up a possible misunderstanding on my part. I understood you to say yesterday that it is your very deliverate opinion that oil recoveries during the past years were about double of what they are generally thought to have been; is that right?

Mr. Schilthuis. The percentage recoveries?

Mr. Cole. Yes.

Mr. Schilthuis. That is, the actual recoveries, expressed, possibly as barrels per acre, or barrels per acre-foot of sand in terms of the total amount of oil which was actually in the ground per acre or per acre-foot of sand, are considerably higher than was previously thought.

Mr. Cole. What do you mean by connate water?

Mr. Schilthuis. Connate water is the term that is commonly applied to the water that is commingled with the oil in the oil-bearing formations. By way of further explanation——

Mr. Cole (interposing). Is that a new discovery?

Mr. Schilthuis. Well, I would not say that it is an entirely new discovery, but it is relatively new. The significance of connate water was not fully appreciated until about 3 or 4 years ago.

In 1937 I wrote a paper on the significance of connate water as it has to do with oil production. Prior to that time, my company had undertaken to develop some basic information relative to the amounts of connate water that coexists with the oil in the reservoirs, and after having obtained that information, I was permitted to publish the paper. I believe it was just about the first published quantitative information concerning the amount of water that is associated with the oil. It threw an entirely different light upon the total quantity of oil per unit volume of sand, we might say, that is contained in the ground, and it has materially changed our conception concerning the efficiency of the ordinary recovery operations even under wide-open flow. It does not, however, affect out estimates of known oil reserves, for the reason that such estimates are based largely upon experience as to what was actually recovered, per acre-foot, from fields now depleted. Hence, it merely places a different light upon the percentage oil recovery. It has nothing to do with the absolute number of barrels that will be recovered in the future by normal operations and does not alter our estimates or statistics on the currently known oil reserves, recoverable by ordinary production methods.

Mr. Cole. Well, in advancing this theory, it has the effect also, has it not, of reducing the quantity of oil remaining underground which has heretofore been regarded as recoverable?

Mr. Schilthuis. No; the implication it has is that a much smaller quantity of oil was left in the ground wasted under our old operations than was previously believed. In the estimates of our present known reserves, connate water and also the shrinkage of the oil due to release of dissolved gas are taken into account, either directly or indirectly, so that out present estimates of recovery are correct.

Mr. Cole. Let me get this clearly before you. The American Petroleum Institute Committee of Eleven on Supply and Demand stated in 1925 that there were 13 billion barrels of oil which had been or would be recovered in the then known fields, by flowing and pumping, and that there would still remain in the ground, after all pumping and flowing ceased, more than 26 billion barrels of additional oil. This was regarded as a reserve for the future.

Is it fair for me to say, in view of the position you take, that that figure should be reduced one-half?

Mr. Schilthuis. No, sir; the figure of 26 billion that you have referred to is not included in the current estimates of the recoverable oil reserves of this country. The 26 billion refers to the oil that it was believed would be left in the ground in the then known fields when ordinary operations ceased.

Mr. Cole. That is right.

Mr. Schilthuis. And, I think the statement was made by the Committee of Eleven that possibly some of such oil could be recovered by secondary recovery methods. The 26 billion barrel figure is probably incorrect and the actual quantity of oil that will be left unrecovered in the ground in the then known fields is probably much less than that amount.

Mr. Cole. According to your theory, it would be about half, would it not?

Mr. Schilthuis. Yes, sir; roughly.

Mr. Cole. Instead of 26 billion barrels of oil left unrecovered underground, as the Petroleum Institute estimated, you state that there would be about 19½ billions.

Mr. Schilthuis. Well, I hesitate to answer precisely, because I do not know exactly what the basis was for estimating the 26-billion figure; but assuming that it was on the same average basis that I discuss in my prepared statement, it would be approximately half of that amount.

Mr. Cole. It would be about one-half?

Mr. Schilthuis. Yes, sir.

Mr. Cole. Then, if we take the Petroleum Institute's figures at that time and reduce the oil left underground from 26 billion, as stated by the Petroleum Institute, to 19½ billion barrels, according to your estimate, and carrying it a little bit further, would you not have this picture: The total oil estimated by the American Petroleum Institute originally in place was 39 billion; oil capable of production, as I have stated, by flowing, pumping, or other means, 13 billion; left underground, 26 billion?

Your figures reduce the total from 39 billion to 19 billion 500 million. Is that correct?

Mr. Schilthuis. Only with reference to the 26 billion that it was believed would be left unrecovered in the ground when operations ceased in the fields then producing.

Mr. Cole. Well, of course, if you cut that in half, you would at the same time reduce the figure of 39 billion, the estimate of the Petroleum Institute of oil originally in place, to one-half.

Mr. Schilthuis. Assuming that is right——

Mr. Cole. That is right.

Mr. Schilthuis. Assuming their estimate is made on the same basis as mine——

Mr. Cole. I am assuming that their estimates then were correct, as I am assuming that yours are now.

Then, if we change the figure of the Petroleum Institute to bring it into agreement with your theory, that would leave the statement of the total oil originally in place as 19,500,000,000; and, as the oil capable of being produced by flowing and pumping, as stated by the Petroleum Institute in the paper to which I have referred, was 13,000,000,000; it would leave the oil underground as reserve for the future of 6,500,000,000 barrels.

Can you dispute the correctness of those figures?

Mr. Schilthuis. Well, I do not have the figures before me, and I do not know.

Mr. Cole. Take them down. According to your testimony if that is not the correct result, I do not know my arithmetic.

Do you have any further questions on this specific point, sir?

Mr. Cole. No; I think not. I have a few other questions that I would like to ask you.

Mr. Schilthuis. Well, I would like first, with your permission, to make a further explanation on this point.

Mr. Cole. You mean in extension of your remarks?

Mr. Schilthuis. Yes.

Mr. Cole. Following the somewhat extended colloquy between Mr. Schilthuis and me, it was suggested by Mr. Schilthuis that he be permitted to insert, at the end of his testimony, a supplemental statement which would clarify what appeared to be a misunderstanding on my part. Appreciating the need for this, because of his admitted experience and qualifications, I suggested that such be done with the understanding that upon receipt of such statement and the filing of the same, I would insert a further comment of my own. The two statements referred to are inserted herewith.

Mr. Schilthius. Mr. Chairman, I now have before me the figures regarding the Committee of Eleven estimates of reserves in 1925, and I would like to address you concerning the relationship between its conception of reserves and the present conception of reserves based on the new knowledge concerning connate water and the space occupied by dissolved gas in the reservoir.

The Committee of Eleven estimated the recoverable reserves of oil in 1925 at 5 billion barrels, based on recoveries by normal flowing and pumping operations. In addition it estimated "that there will remain 26 billion barrels of oil" unrecovered in the fields then producing after the normal flowing and pumping operations cease, "a considerable portion of which can be recovered" by secondary operations, such as artificial water flooding. It should be kept in mind that up to 1925, 8 billion barrels had already been produced. It will thus be seen that the committee's estimates of remaining recoverable reserves of 5 billion barrels plus the prior recovery of 8 billion barrels gives an estimate of 13 billion barrels of ultimate recovery by normal flowing and pumping operations from the fields then producing. Based on the committee's report, the chairman has correctly ascertained that in the then producing fields there were originally 39 billion barrels of oil in place.

Under the new conception of reserves based on our knowledge regarding connate water and the space occupied by dissolved gas in the reservoir, we now know that the Committee of Eleven was in error in its estimate of 26 billion barrels of oil remaining after the cessation of recovery by normal flowing and pumping operations, and that the total oil in place was substantially less than 39 billion barrels; less by an amount equal to the volume of connate water in the reservoir and by the space occupied by gas dissolved in the oil. Assuming the applicability of an average condition such as I stated in my paper (that is, 25 percent connate water, and 15 percent shrinkage due to dissolved gas), the total oil originally in place was 23 billion barrels or 16 billion less than the 39 billion barrels determined from the committee's report. In other words, after deducting the 8 billion already produced and the 5 billion barrels reserve recoverable by normal flowing and pumping operations, there actually remain unrecovered only 10 billion barrels, some part of which might be recovered by secondary methods, instead of 26 billion as estimated by the Committee.

It should be kept in mind that the quantitative estimates of recoverable reserves by the Committee of Eleven and as determined in subsequent reports include only the oil recoverable by the methods then currently employed. They do not include oil which might be recoverable by secondary operations except in the particular fields where such operations are actually in effect. Accordingly, the estimates today of approximately 20 billion barrels of recoverable oil correspond to the 5-billion-barrel estimate for 1925 by the Committee of Eleven; that is, neither figure includes oil that might be recovered by secondary operations not actually employed at the time. The 20-billion figure used today takes into account the connate water and shrinkage due to dissolved gas in the reservoir.

So far as I know, no published estimates are currently made as to the amount of oil that will remain in the now known fields after the recovery of oil by present methods of operation. That is to say, there are no current estimates corresponding to the Committee of Eleven's 26-billion-barrel estimate in 1925.

The known reserves today greatly exceed the known reserves of 1925.

The following table of comparison may assist in an understanding of the 1925 report and the effect of the new conception on the estimates made in that report. It should be kept in mind that this table relates only to 1925 estimates and not to present reserves.

	Under earlier conceptions	Under present conceptions
	Barrels	*Barrels*
Estimated known remaining reserve in 1925[1] (recoverable by normal operations)	5,000,000,000	5,000,000,000
Total production prior to 1925	8,000,000,000	8,000,000,000
Ultimate recovery	13,000,000,000	13,000,000,000
Estimated oil that will ultimately be left unrecovered in fields then producing, part of which might be recovered by secondary operations	26,000,000,000	10,000,000,000
Total oil originally in place in fields then producing	39,000,000,000	23,000,000,000

[1] All quantities expressed herein are in round numbers merely for convenience.

Mr. Cole. During these hearings last week, I called to the attention of Mr. Ralph J. Schilthuis the estimates of petroleum reserves made in 1925 by the Committee of Eleven of the American Petroleum Institute and requested him to submit a supplemental statement in which he would apply to these earlier figures the present conception of reserves based on the more recent knowledge concerning connate water and space occupied by dissolved gas in the reservoir. Mr. Schilthuis has been good enough to do this and I place his supplemental statement in the record at this point.

It will be recalled that the Committee of Eleven estimated the oil originally in place in the then-producing fields at 39 billion barrels, of which 13 billion barrels would be recovered by normal flowing and pumping operations, leaving 26 billion barrels unrecovered in the fields then producing, a considerable portion of which could be recovered by secondary operations.

Under the new conception of reserves based on the knowledge regarding connate water and the space occupied by dissolved gas in the reservoir, Mr. Schilthuis states that the Committee of Eleven was in error in its estimate of 26 billion barrels remaining underground after the cessation of recovery by normal flowing and pumping operations and that the total oil in place was substantially less than 39 billion barrels.

Under present conceptions, Mr. Schilthuis states the total oil originally in place in the fields producing when the Committee of Eleven made its report should be reduced from 39 billion barrels to 23 billion barrels and that the estimated oil that would ultimately be left unrecovered in the fields then producing, part of which might be recovered by secondary operations, should be reduced from 26 billion barrels to 10 billion barrels, or, in each instance, a reduction of 16 billion barrels, which is the equivalent of the pore space in the then-producing reservoirs which was occupied by connate water and dissolved gas.

The present interest of this committee in the report of the Committee of Eleven is a continuation of the interest shown in that report during our 1934 inquiry. At least 15 of the witnesses who appeared before us in 1934 were questioned about that report or referred to it. Some of the witnesses in 1934 continued to support the 1925 conclusions of the Committee of Eleven, while others did not, to varying degrees.

Several of the witnesses appearing before our committee in 1934 were questioned about the 26 billion barrels, which the Committee of Eleven in its discussion of petroleum reserves regarded as "additional oil," a considerable portion of which could be recovered from the then present producing fields by improved and known processes, when price justifies (pp. 4, 48, and 49 of its report), and as to the corresponding amount which might be regarded similarly as remaining underground in 1934.

The estimates as to the latter varied considerably. Mr. J. Edgar Pew (p. 2030) estimated the amount as probably being from twenty-five to thirty billion barrels; Mr. Wallace E. Pratt (p. 2167) thought the figure ought to be somewhere around 40 billion barrels, but stated he had not calculated it. Mr. Stanley Gill (p. 2119) estimated the amount as being from thirty-eight to one hundred and fifteen billion barrels. Mr. Gill said this oil could ultimately be produced if and when the demand for crude oil justifies the expenditure necessary for its recovery and that this oil must be considered in any estimation of the total liquid fuel reserves of the United States.

If the present inquiry is considered in the light of the testimony previously presented to it, the committee's interest in the principal and supplemental statements by Mr. Schilthuis is apparent. In his supplemental statement, he has reduced, by applying present conceptions, the total oil originally in place in the fields producing in 1925 from 39 billion barrels to 23 billion barrels and has reduced correspondingly from 26 billion barrels to 10 billion barrels the oil left underground in those fields.

As to the present, Mr. Schilthuis says he knows of no published estimates currently made as to the amount of oil that will remain in the fields after the recovery of oil by present methods of operations. It is evident, however, that there is a belief that minimum quantities of oil will remain underground for future recovery in many of the present efficiently operated fields. According to the principal statement of Mr. Schilthuis, recovery closely approaches 100 percent of the recoverable oil in the fields which are producing at a high degree of efficiency.

A comparison of the present testimony with that submitted in 1934 may result in some question as to the significance, as a probable oil reserve of the future, of the petroleum previously thought to have been left underground, after flowing and pumping had ceased.

The committee wishes to thank Mr. Schilthuis for his courtesy in preparing and submitting to the committee his supplemental statement on this inquiry regarding the Committee of Eleven estimates of reserves in 1925.

Let us turn to page 13 of your paper for a moment.

In preparing the table on page 13 of your paper——

Mr. Schilthuis. May I interrupt, sir?

Mr. Cole. Yes.

Mr. Schilthuis. I still would like to get at the question we were discussing a moment ago before we go into a consideration of the table on page 13. That table deals with the estimates of oil waste. I would first like to try to clear up the point concerning the effect of connate water and shrinkage upon the efficiency of oil extraction or recovery and upon the estimates of known reserves of oil. May I proceed along that line?

Mr. Cole. Yes; I would like to know if in preparing the table which you are now going to discuss, if there was a study made of all producing oil fields in Texas, Louisiana, and New Mexico.

Mr. Schilthuis. Well, that again is not on the question that I would like to take up at this point.

The Chairman. I thought you were going to discuss that now.

Mr. Schilthuis. No; not at this moment. I would like to discuss the question we were on just a moment ago and try to clear it up.

Mr. Cole. All right.

Mr. Schilthuis. Let us visualize for a moment. A 1-acre tract of land under which the oil-bearing sands have a thickness of just 1 foot—that would not be a commercial proposition, but it will serve our purpose here for illustration. Now, beneath this 1-acre tract there is, between the sand grains, a total pore space of about 2,000 barrels. In the old days it was thought that the whole 2,000 barrels of pore space was filled with oil.

Under the old methods of operation where fields were produced wide open——

Mr. Cole. What do you mean by the old days? Do you mean that this report of the Petroleum Institute would be in the old days?

Mr. Schilthuis. Well, prior to 1930.

Mr. Cole. Well, that would be in the old days?

Mr. Schilthuis. That is right. Well, under the old conditions where fields were produced wide open, we know from actual experience, in the fields that are now depleted or are almost depleted, that we recovered on the average about 700 barrels per acre-foot. Under the old conception that the 2,000 barrels of pore space was originally filled entirely with oil, the percentage of recovery would be 35 percent, and it would be said that about 1,300 barrels of oil were left unrecovered in the ground.

Under or new conception of the situation, we know that the 2,000 barrels of pore space beneath our illustrative tract is not filled entirely with oil, but that the oil is commingled with connate water, and the original total amount of oil, considering shrinkage due to release of dissolved gas, is about 1,250 barrels, as measured at the surface. Hence the 700 barrels of oil actually recovered, from our field experience, amounts to a percentage recovery of something like 55 percent rather than 35 percent as previously thought.

We have also learned that there is a certain amount of the total oil in place that is not recoverable by any practical means. It would not be recoverable even by secondary methods. When this is taken into account in addition to the connate water and the shrinkage, the 700 barrels actually recovered is about 70 percent of what may be termed the original total amount of recoverable oil in place. Thus under the old wide-open operations it may be said that about 30 percent of the recoverable oil was wasted.

Mr. Cole. I do not want to carry this thing too far, take too much time on it; but let us take a concrete case. Assume this table in front of us is on an oil field.

Mr. Schilthuis. Yes.

Mr. Cole. Heretofore, before your appearance before this committee, I have understood, according to the Petroleum Institute's figures that, if there was an estimated 2,000 barrels of oil under that piece of ground, about one-third of it was recoverable.

Mr. Schilthuis. That was the early conception.

Mr. Cole. That was their conception, and always has been, before we heard from you. I think I am right about that.

Mr. Schilthuis. No; may I interrupt at this point? I do not believe that it has been everyone's conception prior to my appearance here.

Mr. Cole. Well, everybody's conception that there were 2,000 barrels of oil——

Mr. Schilthuis. No. I would like to point out that Mr. Miller and Mr. Shea, of the Bureau of Mines, discussed this same point in their prepared statements at the November 1939 proceedings of your committee. They explained the situation in essentially the same manner that I do and made the statement that the efficiency of recovery, even under the old wide-open operation, is considerably higher then previously thought before we knew something about the actual reservoir conditions that do exist. So, it is not an entirely new conception on my part.

Mr. Cole. As to the estimated quantity of oil in a certain sand, there would not be much difference of opinion between you and others on that subject?

Mr. Schilthuis. No; there would not be in estimates made at this time.

Mr. Cole. All right. Now, we will take a field which has been in operation in the past. The petroleum Institute's figures as well as most of the figures of the other witnesses on the subject would say that there were 2,000 barrels of oil in that sand; 700 barrels, as you just said, have been brought to the surface, recovered. We know that. There is not any guesswork about that.

Mr. Schilthuis. That is right; 700 barrels per acre-foot have been recovered.

Mr. Cole. Yes. Now, your position is, that of the recoverable reserves remaining in the ground instead of there being 1,300 barrels there is just about one-half of that?

Mr. Schilthuis. That has no connection with our current figures on known oil reserves. The current figures on oil reserves do not include the amounts of oil that we think have been left unrecovered in the ground by the old wide-open operations. They include only the oil that is recoverable by our ordinary methods of operation from fields now producing. I repeat, they do not include oil remaining in exhausted fields that was not recovered under the old wide-open operation. Such oil just is not in the picture.

Mr. Cole. I believe you concede that 700 barrels out of this pool have been recovered which is 70 percent, approximately, of the total original amount underground according to your paper here.

Mr. Schilthuis. It is 70 percent of what may be considered recoverable oil by the ordinary mode of operation; that is right.

Mr. Cole. All right. You draw your conclusions from that, and I will draw mine. I think that yours have changed mine somewhat.

Mr. Schilthuis. I would now like to pass to the main statement, page 13, where I have given an estimate of the magnitude of the underground waste of oil that will ultimately occur, assuming continuance of the present operating conditions.

In the table on page 13, I show both the estimated original oil reserves and the current reserves, as of the first of this year, in the three States that I am covering. The total current reserves of the three States is approximately 13,000,000,000 barrels of oil, which will be in substantial agreement with the figures of the American Petroleum Institute. I would like to mention again that these estimates take into account connate water, the shrinkage of the oil, and the portion of the oil that is not recoverable, even though the most efficient practical mode of operation may be employed.

The total now known oil reserves for the United States on the same basis will be about 20,000,000,000 barrels. This figure also takes all of the new conceptions into account, so there is nothing wrong with the estimates.

Now, if one cares to go back to the old exhausted fields in which there probably remain some oil that might be recovered by some secondary means, such oil would have to be added to the aforementioned totals, so that the figure on the current reserve for the country as a whole would be greater than 20,000,000,000 barrels, or thereabouts. Likewise, for the Texas, Louisiana, and New Mexico territory, the figure would be something greater than 13,000,000,000 barrels. However, I want to make the point again that published figures on oil reserves represent only the oil that can be obtained under currently used methods of operation and do not consider any of the oil that might be left in the ground in depleted fields.

Now, in table 3, I give the estimates of the oil waste in Texas, Louisiana, and New Mexico expressed as a percentage of the reserves. In Texas the waste that will ultimately be sustained, assuming that current operation conditions will remain in vogue, is forty-seven one-hundredths of 1 percent of the current known reserve; in Louisiana it is 3.1 percent; and in New Mexico it is thirty-six one-hundredths of 1 percent. For the territory as a whole it is about sixty-five one-hundredths of 1 percent of the known reserve.

These figures show the waste to be but a very small fraction of the reserves, and I think that as a practical matter the waste is insignificant. There is very little avoidable waste of oil either above or underground under the current condition of operations. I think this is of particular importance in view of the fact that the territory which I am covering contains approximately 64 percent of the total current known oil reserves of the United States.

Mr. Cole. How do you determine in the table the extent of waste?

Mr. Schilthuis. Well, under the old operating conditions, where the gas was blown at random and fields were produced wide open, the information now at hand indicates that probably 30 percent of the recoverable oil was wasted. Now, our experience under current controlled operating conditions leads us to believe that we will obtain 80 to 85 percent of the total oil in place and almost 100 percent of the recoverable oil. With this limited amount of information, it is true that we cannot make any precise estimate of the waste, but it does serve as a tool by which we can determine the magnitude. That is, we can determine whether the waste is a hundred barrels, a thousand barrels, a million barrels, 10 million barrels, or a billion barrels. It does not make much difference whether the waste is actually half as much as I have stated here or twice that much. It still is small and has very little practical significance.

Mr. Cole. You did not study all of the fields in all of these three States in order to arrive at these figures?

Mr. Schilthuis. Yes, sir, I did; I had the figures on every field in the three States that I have covered here. I considered the reserves, the rates of production, and other data.

Mr. Cole. Are those figures available? They have not been made available to the committee. Are they in your possession?

Mr. Schilthuis. They are in my possession. I do not have them prepared in any form to present to the committee at this time.

I would like to say that in my main statement I have discussed in detail the method by which the estimate on waste of oil is made. I believe that other engineers can examine it and arrive at a conclusion as to the soundness of the position that I have taken.

Mr. Cole. Mr. Schilthuis, on page 9 of your statement there appears this sentence:

> With the regulation now in effect in New Mexico for gas-oil ratio limitation there is very little, if any, reasonably avoidable waste of gas of any kind occurring in that State.

In that connection, I want to file at this point in the record "Minutes of the combined committees Subexecutive Committee and Engineers' Advisory Committee, Midland, Tex.," signed by Mr. Glenn Staley, chairman, Engineers' Committee. Those statements which I have marked with a lead pencil as to Mr. Staley's views of the New Mexico situation can be considered by you in revising your remarks without taking the time for it now. I am referring to the meeting held in Santa Fe, N. Mex., December 6, 1939.

(The minutes referred to are as follows:)

MINUTES OF THE COMBINED COMMITTEES, SUBEXECUTIVE COMMITTEE, AND ENGINEERS, ADVISORY COMMITTEE, MIDLAND, TEX.

Quoting from the minutes of the Lea County Executive Committee meeting held in the office of the State land commissioner, Frank Worden, Santa Fe, N. Mex., December 6, 1939, the following resolution was unanimously adopted: "Moved, that A. M. McCorkle, Chairman, be empowered to appoint a Subadvisory Committee of seven including the chairman of the Lea County Operators, Executive Committee, and an Engineering Advisory Committee of five of which Mr. C. G. Staley will be Chairman, which Engineering Advisory Committee shall be responsible to the Subadvisory Committee. Said Committees shall act in an advisory capacity to Mr. C. G. Staley, Umpire. Each member of said Committees shall have the right to be represented by proxy in 'cases of emergency.' "

Acting on the above authority, I am hereby appointing the following persons to serve on the above committees:

Subadvisory committee.—Edgar Kraus, Atlantic Refining Co., Carlsbad, N. Mex.; Hugh Johnston, Continental Oil Co., Hobbs, N. Mex.; D. A. Powell, Drilling & Exploration Co., Hobbs, N. Mex.; J. W. House, Humble Oil & Refining Co., Midland, Tex.; H. J. Kemler, vice chairman, Shell Oil Co., Inc., Midland, Tex.; A. M. McCorkle, chairman, Stanolind Oil & Gas Co., Fort Worth, Tex.; H. S. Cole, Jr., The Texas Co., Fort Worth, Tex.

Engineering advisory committee.—R. S. Christie, Amerada Petroleum Corporation, Fort Worth, Tex.; L. L. Gray, Gulf Oil Corporation, Tulsa, Okla.; R. S. Dewey, Humble Oil & Refining Co., Midland, Tex.; P. N. Colliston, Phillips Petroleum Co., Midland, Tex.; Robert Schuehle, Shell Oil Co., Inc., Midland, Tex.; C. G. Staley, chairman, umpire, Lea County Operators, Committee, Hobbs, N. Mex.

I would suggest that both of these committees meet with Mr. Staley at Hobbs, N. Mex., or Midland, Tex., at the earliest possible date to, among other things, discuss and outline program of procedure for developing data and evidence to be presented to the New Mexico Oil Conservation Commission at hearing or hearings which will be held at Santa Fe, N. Mex., Monday, February 5, 1940, for the purpose of adopting proper gas-oil ratio limits and such other regulations as are necessary in connection therewith for each field in Lea County, N. Mex.

Mr. Staley should prepare a report or minutes of each meeting held by either committee, copies of which should be furnished the members of each committee and each member of the Lea County Operators' Executive Committee.

In accorance with the above, a joint meeting of the subadvisory committee and the engineering advisory Committee was held at the Scharbauer Hotel in Midland. The meeting was called to order at 1 p. m. The following were present:

Subadvisory committee.—Edgar Kraus, Atlantic Refining Co., Carlsbad, N. Mex.; Hugh Johnston, Continental Oil Co., Hobbs, N. Mex.; D. A. Powell, Drilling & Exploration Co., Hobbs, N. Mex.; J. W. House, Humble Oil & Refining Co., Midland, Tex.; H. J. Kemler, vice chairman, Shell Oil Co., Inc., Midland, Tex.; George Card, acting for A. M. McCorkle, chairman, Stanolind Oil & Gas Co., Fort Worth, Tex.; H. S. Cole, Jr., The Texas Co., Fort Worth, Tex.

Engineering advisory committee.—James Low, acting for R. S. Christie, Amerada Petroleum Corporation, Fort Worth, Tex.; L. L. Gray, Gulf Oil Corporation, Tulsa, Okla.; R. S. Dewey, Humble Oil & Refining Co., Midland, Tex.; P. N. Colliston, Phillips Petroleum Co., Midland, Tex.; Robert Schuehle, Shell Oil Co., Inc., Midland, Tex.; C. G. Staley, chairman, umpire, Lea County Operators, Committee, Hobbs, N. Mex.

Discussion brought out the following:

A suggestion was made that Mr. Staley appoint a committee for testing gas-oil ratios with the assistance of the engineers of the various companies. A discussion followed pertaining to a committee for this testing purpose.

It was decided that since there were so many wells in the different areas in question, that there should be established an engineering advisory committee, or rather a field engineering advisory committee, such members to be appointed by Mr. Staley, and that they should in turn have under their jurisdiction various field committees for determining the gas-oil ratios of the various wells.

The point was then brought up as to whether the various operators would consent or be willing for these field engineers to make these surveys upon their properties, inasmuch as these representatives or engineers were from various other companies. After discussion along these lines, it was decided that the operators would probably be willing to consent to this arrangement if the survey were to be conducted by the engineers acting as a committee, and further, if some representative from Mr. Staley's office could be present, or a witness from their company, as is done when a potential test is made.

The question was then raised as to the method of taking these ratios and the period of time that should elapse between surveys. Some of the members thought that a more reliable survey could be made if the period of time lapsing between the gas-oil ratio tests be probably 6 months or a year. Further in this connection, a question was raised as to the accuracy and reliability of the gas-oil ratios reported on the C–104A each month.

It was brought out that these figures are not always reliable, due to the fact that the gas-oil ratios are sometimes taken under varying conditions and methods, but that the ratios being made in good faith, and under the nonuniform conditions existing, are as nearly correct as possible.

The question of spot testing was brought up. Discussion then followed by various members who all agreed that this was unreliable and that some impartial method should be adopted or some method that would be open and fair to all operators. It was stated that the figures taken by major companies in this connection are fairly accurate and correct.

Mr. Staley brought out the fact that in areas where gasoline plants and gas companies take gas from the wells, the readings are more or less based upon the total lease production rather than by wells, and an average taken of each well based upon the number of wells on the lease rather than actual readings from individual wells. Mr. Staley also suggested that a resolution be drawn up adopting a uniform procedure to be followed in making these gas-oil ratios.

Mr. Cole of the Texas Co. drew up the following resolution to be recommended to the Lea County Operators' Committee for presentation to the Oil Conservation Commission. This resolution was adopted unanimously by those present:

RESOLUTION

"Resolved that the Engineering Advisory Committee of the Lea County Operators' Committee shall act in a supervisory capacity over individual Field Engineering Committees, each of which is to be appointed by Mr. Staley, and which Field Engineering Committees are to proceed at the earliest possible date with the determination of producing gas-oil ratios on each well in their respective fields; and that said Engineering Advisory Committee shall proceed immediately with the determination of individual well maximum allowable gas-oil ratios for each field in Lea County, New Mexico, to be recommended to the Lea County Operators' Advisory Committee for the ultimate purpose of presentation as a recommendation to the Conservation Commission by the Lea County Operators' Committee and that this determination be made promptly at the earliest date possible, based on existing information, if in the opinion of said Engineering Advisory Committee existing information is sufficiently accurate and adequate for that purpose. If, in their opinion, such existing information as to any such field is not sufficiently adequate or accurate, then the Committee shall prepare such individual field maximum allowable gas-oil ratio recommendations as soon as the information is made available by the above-referred-to Field Engineering Committees."

The point as to whether the independent operators could be required to install orifice flanges in the vent lines, or other equipment relative to making gas-oil ratio tests, so that the orifice well tester could be used, was brought up. It was decided that all operators could be required to provide equipment relative to the installing of testing equipment, but that the actual testing equipment could and would be furnished by the various major companies and by the State.

It was stated that subsequent tests will not take as much time and will be simpler than the initial test.

Mr. Staley brought out the fact that three pools, namely, Eunice, Monument, and Penrose, are badly in need of corrective work. It was stated that when the prevailing conditions in this area are corrected fully 80 percent of the job will be completed, and that initial efforts should be confined to these three fields.

Several members raised the question as to just what figure the maximum allowable gas-oil ratio should be placed, since wells in some instances increase the gas-oil ratio with depletion. Due to this fact it was thought that some flexible method should be adopted.

The suggestion was made that the maximum gas-oil ratio in any pool have a given function for all pools so as not to work a hardship on any operator in the area. This ratio might be lowered after a given period—6 months—and lowered again after a similar period. The question was brought up as to whether the figures on the C–104A were accurate enough to establish an average function to be used until such time as a more accurate survey could be made. It was suggested that at least 3 months' time be given.

It was decided that the above-mentioned gas-oil ratio surveys in order to be conducted properly should be carried out from an engineering standpoint so that they would have some real and useful value in the future.

A copy of the tentative rules and regulations drawn up by this group with regard to the gas-oil ratio surveys in New Mexico is attached hereto.

Also included is a gas-oil ratio tabulation and tabulation showing the average gas-oil ratios in all pools and number of wells with ratios over the maximum (it will be noted that there is a tentative maximum figure established by the oil conservation commission and one estimated by the engineers).

The following is an outline of the minutes of the meeting held by the engineers' advisory committee. Due to the committee being scattered, this outline has not been reviewed by all members:

Pursuant to instructions and your resolutions adopted at the joint meeting with the Lea County Subengineering Committee held in Midland, Tex., January 8, 1940, the Lea County Suboperators' Engineering Committee submit the following progress report and tentative recommendations:

In addition to drawing up the rules for conducting gas-oil ratio tests, the engineering committee completed plans for the organization and determined the source of the meters and necessary equipment to make the tests. The major producers will loan most of the necessary equipment and companies that can will furnish men and automobiles. The expense of the survey will be distributed as other proration expense. Companies furnishing men and automobiles will be credited with $6 per man-day and automobiles at the rate of 4 cents per mile while used for this work.

A large number of subjects were discussed; on some there was general agreement, but others remained controversial. The committee believed that, due to inadequate data or to incomplete analyses, everything should be considered tentative, at least until the next meeting when witnessed gas-oil ratio tests will be available on a large number of wells. The next meeting will be held about February 14, 1940.

There was general agreement on the following:

1. Data on the amount of gas dissolved in the oil under reservoir conditions might be valuable in analyzing conditions in each pool; arrangements were made to make tests in pools where this information was lacking.
2. That the gas-oil ratio tests should be made at Monument, Eunice, Penrose in the order named. These pools constitute over 60 percent of the total wells. Other pools to be tested later.
3. Where more than one well is produced on a 40-acre unit, the total oil and total gas shall be used in determining the gas-oil ratio of the unit.
4. Gas should not be produced primarily for stripping in gasoline plants nor for burning to produce carbon black.
5. That the present pool limits do not conform to the producing reservoir. It is desirable to have them conform. A geological committee is studying the problem and if not reasonable to change pool limits, it will designate the limits of the reservoir.
6. The proration office personnel should be increased to take care of the additional work due to gas-oil ratio control and surveys.
7. When remedial work is completed; that the back allowable from date of starting the work but not to exceed 60 days be granted in the amount the well would have been allowed on the basis of the gas-oil ratio test subsequent to the remedial work.
8. In all pools, except Monument and Hobbs, the maximum amount of gas permitted to be produced from a unit shall be the maximum gas-oil ratio for the pool times the current top allowable. In case a well produces more than this amount of gas in producing its normal allowable, its allowable shall be reduced by the fraction having as a numerator the maximum current gas allowable and for the denominator the volume of gas from the unit when producing the normal allowable.
9. That semiannual shut-in bottom hole pressure surveys be made by the proration office in all Lea County pools. The pool pressure has an important bearing on what may be considered an efficient gas-oil ratio.
10. In gas packer wells, any gas produced from the casinghead shall be measured and included in gas-oil ratio calculations.

Definite agreement was not reached on the following:

1. The exact manner of control of production from dry gas wells producing from a reservoir containing oil.
2. The definition of a gas well—a well producing with a gas-oil ratio of over 100,000 cubic feet per barrel was the most favored definition.
3. The volume of gas to be permitted for gas lift.
4. The proper maximum gas-oil ratio to be recommended for general State-wide application and the number of wells to be completed before pool rules should be promulgated and applied.
5. Whether the gas-oil ratio surveys should be made once or twice a year.
6. The exact manner of applying the gas-oil ratio penalty to Monument and Hobbs which have proration plans different than other pools in Lea County.

The engineering committee requests criticism and suggestions in order that reasonable and complete recommendations can be presented to the operators committee and the conservation commission.

Respectfully submitted,

GLENN STALEY,
Chairman, Engineers Committee.

Gas-oil ratio tabulation

	Total wells	Over 1,000	Over 7,000	6,000	5,000	Tentative maximum, engineers estimate	Tentative maximum, commission ratio	Average G-O ratio	M
Vacuum						2,000	2,000	873	2.3.
South Lovington.						1,500	1.500	739	2.03.
Hobbs						4,000	3,500	1,882	2.14.
Monument	493	28		55	65	6,000	5,000	3,291	1.83.
Eunice	489	18-marg-46.	64	81	101	7,000	7,000	5,653	1.22.
South Eunice	93	3-marg-6	8		7-marg-18	7,000	5,000	3,908	1.79.
Lynn	26				5	5,000	3,000	2,429	2.06.
Cooper	97	28 gas lift	55-marg		Should grant exception for strippers.	10,000	10,000	12,446	Question.
Jal	24	3-marg				10,000	10,000	7,001	1.43.
Eaves	20	1			3	7,000	4,000	4,058	1.75.
Rhodes						2,000	1,000		
Langlie	124	6	7	10	12	7,000	5,000	3,723	1.88.
Mattix	127	7	14	15	18	7,000	5,000	3,386	2.08.
Skelly to Mattix and Penrose.								2,699	
Penrose	150	23			43	7,000	7,000	4,876	
Hardy							5,000	2,622	

Gas well classified as one producing 100,000 gas-oil ratio. Should be shut in except for domestic, commercial, or uses sanctioned by the commission.

Field summary

Cooper field:	
Age (years)	10
Total oil wells	97
Average gas-oil ratio	12,448
Average gas-fluid ratio	1,026
Gas lift wells	28
Pumping wells	19
Flowing wells	50
Gas-fluid ratio over 5,000	5
Gas-oil ratio over 5,000	19
Number of remedial jobs	33
Eaves field:	
Age (years)	11
Total oil wells	20
Average gas-oil ratio	4,058
Average gas-fluid ratio	812
Gas-lift wells	8
Eaves field—Continued.	
Pumping wells	1
Flowing wells	11
Gas-fluid ratio over 5,000	1
Gas-oil ratio over 5,000	3
Remedial jobs	3
Eunice field:	
Age (years)	11
Total oil wells	489
Average gas-oil ratio	5,653
Average gas-fluid ratio	3,926
Gas-lift wells	23
Pumping wells	16
Flowing wells	450
Gas-fluid ratio over 5,000	101
Gas-oil ratio over 5,000	101
Remedial jobs	65

Field summary—Continued

Hardy field:	
Age (years)	4
Total oil wells	104
Average gas-oil ratio	2, 622
Average gas-fluid ratio	2, 600
Gas-lift wells	-----
Pumping wells	16
Flowing wells	88
Gas-fluid ratio over 5,000	9
Gas-oil ratio over 5,000	13
Remedial jobs	4
Hobbs field:	
Age (years)	10
Total oil wells	252
Average gas-oil ratio	1, 882
Average gas-fluid ratio	1, 016
Gas-lift wells	9
Pumping wells	15
Flowing wells	228
Gas-fluid ratio over 5,000	7
Gas-oil ratio over 5,000	7
Remedial jobs	81
Jal field:	
Age (years)	11
Total oil wells	24
Average gas-oil ratio	7, 001
Average gas-fluid ratio	280
Gas-lift wells	3
Pumping wells	10
Flowing wells	11
Gas-fluid ratio over 5,000	1
Gas-oil ratio over 5,000	6
Remedial jobs	3
Langlie field:	
Age (years)	11
Total oil wells	124
Average gas-oil ratio	3, 723
Average gas-fluid ratio	1, 898
Gas-lift wells	1
Pumping wells	3
Flowing wells	120
Gas-fluid ratio over 5,000	9
Gas-oil ratio over 5,000	12
Remedial jobs	8
Lynn area:	
Age (years)	10
Total oil wells	26
Average gas-oil ratio	2, 429
Average gas-fluid ratio	1, 215
Gas-lift wells	1
Pumping wells	2
Flowing wells	23
Gas-fluid ratio over 5,000	2
Gas-oil ratio over 5,000	3
Remedial jobs	1
Mattix area:	
Age	5
Total oil wells	127
Average gas-oil ratio	3, 386
Average gas-fluid ratio	3, 295
Gas-lift wells	2
Pumping wells	8
Flowing wells	117
Gas-fluid ratio over 5,000	14
Gas-oil ratio over 5,000	18
Remedial jobs	7

Monument field:	
Age	5
Total oil wells	493
Average gas-oil ratio	3, 291
Average gas-fluid ratio	3, 094
Gas-lift wells	4
Pumping wells	8
Flowing wells	481
Gas-fluid ratio over 5,000	65
Gas-oil ratio over 5,000	65
Remedial jobs	115
Penrose area:	
Age	4
Total oil wells	150
Average gas-oil ratio	4, 876
Average gas-fluid ratio	4, 798
Gas-lift wells	1
Pumping wells	19
Flowing wells	130
Gas-fluid ratio over 5,000	41
Gas-oil ratio over 5,000	43
Remedial jobs	10
Skelly area:	
Age	5
Total oil wells	56
Average gas-oil ratio	2, 699
Average gas-fluid ratio	2, 699
Gas-lift wells	—
Pumping wells	18
Flowing wells	38
Gas-fluid ratio over 5,000	5
Gas-oil ratio over 5,000	8
Remedial jobs	—
South Eunice field:	
Age	9
Total oil wells	93
Average gas-oil ratio	3, 908
Average gas-fluid ratio	3, 673
Gas-lift wells	3
Pumping wells	1
Flowing wells	89
Gas-fluid ratio over 5,000	18
Gas-oil ratio over 5,000	18
Remedial jobs	5
South Lovington field:	
Age	1
Total oil wells	24
Average gas-oil ratio	739
Average gas-fluid ratio	739
Gas-lift wells	—
Pumping wells	1
Flowing wells	23
Gas-fluid ratio over 5,000	—
Gas-oil ratio over 5,000	—
Remedial jobs	—
Vacuum field:	
Age	3
Total oil wells	245
Average gas-oil ratio	873
Average gas-fluid ratio	873
Gas-lift wells	6
Pumping wells	21
Flowing wells	218
Gas-fluid ratio over 5,000	1
Gas-oil ratio over 5,000	1
Remedial jobs	5

Field summary—Continued

COOPER FIELD

[Wells with gas-oil ratios over 10,000]

Company lease	Well	S. T. R.	Ratio
Gulf Oil Corporation:			
Cooper	1	11-24-36	88, 233
Ramsey	2	2-25-36	47, 808
Humble Oil and Refining Co.:			
Cooper	1	25-24-36	10, 453
Cooper, J. M	1	14-24-36	16, 589
Phillips Petroleum Co.:			
Woolworth	2	23-24-36	239, 496
Do	3	23-24-36	225, 799
Do	5	27-24-36	101, 134
Do	6	26-24-36	132, 650
Phillips Petroleum Co.—Continued.			
Woolworth—Con.			
Do	7	23-24-36	20, 928
Do	10	26-24-36	62, 000
Do	11	26-24-36	55, 525
Do	13	26-24-36	124, 600
Do	14	26-24-36	14, 569
Tidewater Association Oil Co.:			
Woolworth B	1	35-24-36	11, 232

EUNICE FIELD

[Gas-oil ratios over 7,000]

Company lease	Well	S. T. R.	Ratio
Amerada Petroleum Corporation:			
State W	2	30-20-37	50, 318
Atlantic Refining Co.:			
State B	1	8-21-36	7, 908
Do	2	8-21-36	7, 331
State O	1	32-20-37	77, 768
Do	2	32-20-37	53, 915
Cities Service Oil Co.:			
Felton	1	28-21-36	38, 200
State C	3	16-21-36	8, 970
State F	1	30-20-37	11, 760
Do	2	30-20-37	12, 120
Do	3	30-20-37	11, 620
Continental Oil Co.:			
Lockhart B	1	31-21-36	49, 520
Do	2	31-21-36	9, 940
Meyers B	1	8-21-36	8, 041
Do	3	8-21-36	15, 636
Reed B	6	23-20-36	7, 982
State F	2	1-21-36	7, 462
Devonian Oil Co.:			
St. Heasley	1	5-21-36	7, 282
Gulf Oil Corporation:			
Bell, R. R	2	8-21-36	10, 087
Bell, B	1	6-21-36	15, 412
Campbell	1	7-21-36	8, 745
Do	2	7-21-36	7, 082
Felton	1	28-21-36	34, 518
Houston	2	7-21-36	16, 550
Janda B	1	32-21-36	7, 500
Janda D	1	2-21-36	11, 798
Leck	1	14-21-36	42, 670
Orcutt B	2	5-21-36	9, 281
Orcutt C	3	7-21-36	14, 088
Ramsey D	2	33-21-36	10, 066
Ramsey Bell	2	9-21-36	12, 167
Do	8	9-21-36	8, 035
Sunshine	1	30-20-37	22, 973
Do	2	30-20-37	52, 588
White B	1	35-20-36	61, 081
Humble Oil and Refining Co.:			
Knox	1	10-21-36	9, 011
Do	5	10-21-36	10, 076
State B	1	29-21-36	12, 250
Midcontinent Petroleum Corporation:			
Marshall	1	11-21-36	9, 150
Do	2	11-21-36	9, 140
Reeves	1	29-20-37	51, 530
Repollo Oil Co.:			
Brownlee	1	25-21-36	12, 800
State "176"	2	19-20-37	40, 000
State "193"	1	30-20-37	19, 122
State "196"	1	32-20-37	29, 528
Shell Oil Co., Inc.:			
Coleman	1	17-21-36	11, 422
Devonian	4	20-21-36	8, 367
State A	2	12-21-35	13, 850
State C	1	24-21-36	11, 099
State E	1	6-21-36	25, 233
State H	1	13-21-35	18, 815
State J	2	32-20-37	29, 314
Do	3	32-20-37	8, 137
State K	1	36-20-36	14, 304
Do	2	36-20-36	12, 584
State L	1	1-21-35	24, 201
Do	2	1-21-35	43, 411
State M	2	1-21-85	12, 794
State N	1	24-21-35	27, 984
Standard Oil Co. of Texas:			
Meredith	2	19-21-36	11, 256
Stanolind Oil & Gas Co.:			
Gilluly A	3	25-20-36	9, 912
Do	10	24-20-36	22, 372
Do	11	24-20-36	18, 224
Gilluly B	1	25-20-36	18, 342
The Texas Co.:			
Rector	3	30-21-36	16, 913
Do	4	30-21-36	10, 900

EAVES AREA

[Gas-oil ratios over 7,000]

Company lease	Well	S. T. R.	Ratio
Gulf Oil Corporation:			
Ramsey	1	12-26-36	8, 292
Stanolind Oil & Gas Co.:			
Farnsworth B	3	7-26-36	29, 935

Field summary—Continued

HARDY FIELD

[Gas-oil ratios over 7,000]

Company lease	Well	S. T. R.	Ratio	Company lease	Well	S. T. R.	Ratio
Amerada Petroleum Corporation:				Repollo Oil Co.:			
Hare	1	33-21-37	18,863	York	1	20-21-37	9,000
Gulf Oil Corporation:				Sun Oil Co.:			
King	3	28-21-37	8,223	Weatherly	1	17-21-37	59,300
Mattern C	1	18-21-37	8,193	The Texas Co.:			
				Alexander	1	7-21-37	18,900

HOBBS FIELD

[Gas-oil ratios over 4,000]

Amerada Petroleum Corporation:				Shell Oil Co.:			
Hardin	2	18-18-38	6,563	Grimes	1	28-18-38	12,360
State B	2	29-18-38	4,000	State D	2	24-18-38	5,176
Atlantic Refining Co.:				Stanolind Oil & Gas Co.:			
Bradley	1	6-19-38	4,489	State A	11	4-19-38	4,817
Continental Oil Co.:				Thorpe	11	10-19-38	4,841
Grimes	3	28-18-38	4,401	Do	26	10-19-38	11,762
State A	1	29-18-38	9,368	Sun Oil Co.:			
Do	2	29-18-38	4,969	McKinley	2	5-19-38	4,000
State B	2	13-18-38	4,087	Do	4	5-19-38	5,450
Samedan Oil Corporation:							
Moon A	1	28-18-38	4,193				

JAL FIELD

[Gas-oil ratios over 10,000]

Humble Oil & Refining Co.:				Southern Petroleum Exploration Co.:			
Lindley A	2	13-25-36	24,129	Ascarte A	2	24-25-36	45,000
Lindley B	1	14-25-36	18,485				

LANGLIE FIELD

[Gas-oil ratios over 7,000]

Gulf Oil Corporation:				Republic Produce Co.:			
Elliott	1	15-25-37	21,882	Crosby	1	22-25-37	18,307
Do	2	15-25-37	67,517	Sun Oil Co.:			
Hershbach Drilling Co.:				Lanehart	1	20-25-37	--------
Burleson	1	8-25-37	8,929	Stuart	3	15-25-37	54,200
Do	2	8-25-37	7,937		4	----------	7,140
Phillips Petroleum Co.:				Texas Co.:			
Woolworth	1	6-25-37	14,710	Fristoe A-2	2	3-25-37	7,060

LYNN AREA

[Gas-oil ratios over 5,000]

Texas Pacific Coal & Oil Co.:				Texas Pacific Coal & Oil Co.—Continued.			
State A	3	21-23-36	5,000	State A	4	21-23-36	8,000
				Do	6	21-23-36	7,000

MATTIX AREA

[Gas-oil ratios over 7,000]

Continental Oil Co.:				Repollo Oil Co.—Con.			
Jack A	6	20-24-37	9,111	Jamison	2	22-24-37	7,200
Gulf Oil Corporation:				State "157" C	2	32-24-37	7,883
Holt State	1	16-24-37	30,000	Shell Oil Co.:			
Parker Drilling Co.:				Black	1	21-24-37	15,427
Erwin	2	33-24-37	22,208	The Texas Co.:			
Repollo Oil Co.:				Fanning	2	4-24-37	20,700
Carter, P	1	9-24-37	27,310	Fristoe	1	35-24-37	26,700

Field summary—Continued

MONUMENT FIELD

[Gas-oil ratios over 6,000]

Company lease	Well	S. T. R.	Ratio
Amerada Petroleum Corporation:			
Adkins	1	5-20-37	20,000
Gaither	1	34-19-36	18,410
State F	3	36-19-36	7,000
State Q	1	16-20-37	19,140
Do	2	16-20-37	22,350
State V	2	36-19-36	7,200
Weir	2	2-20-36	8,641
Do	4	35-19-36	7,500
Do	5	35-19-36	7,632
Do	8	35-19-36	50,000
Weir A	1	25-19-36	7,000
Weir B	1	26-19-36	13,221
Anderson Prichard Oil Corporation.:			
Britt B	1	5-20-36	13,227
State A	1	2-20-36	6,500
Cities Service Oil Co.:			
Laughlin	2	5-20-37	9,250
Continental Oil Co.:			
Britt A	2	6-20-37	7,288
Britt B	1	8-20-37	8,192
Do	3	15-20-37	9,074
Gulf Oil Corporation:			
Anderson	4	17-20-37	9,369
Graham St. B	2	2-20-36	6,880
Gulf Oil Corporation—Continued.			
Graham St. H	1	13-20-36	14,455
Kutter B	3	8-19-37	12,424
Matthews	1	6-20-37	20,458
Do	2	6-20-37	17,882
Do	3	6-20-37	12,267
Smith	1	34-19-36	14,444
Whitmire	1	8-20-37	20,831
Do	2	8-20-37	10,498
Walden A	1	15-22-37	9,384
Walden B	2	15-22-37	35,139
Walden C	1	15-22-37	35,139
Do	2	15-22-37	35,139
Cary	1	22-22-37	11,288
Do	3	22-22-37	13,000
Do	4	22-22-37	9,000
Elliott B	2	9-22-37	11,000
Walden	1	15-22-37	22,676
The Texas Co.:			
Falby A	2	8-22-37	22,531
Tidewater Association Oil Co.:			
Walden	1	21-22-37	10,590
Do	2	21-22-37	7,136
Do	3	21-22-37	8,567

SKELLY AREA

[Gas-oil ratios over 7,000]

Company lease	Well	S. T. R.	Ratio
Gulf Oil Corporation:			
Leonard B	1	32-23-37	10,000
Repollo Oil Co.:			
Cowden	1	31-23-37	12,250

SOUTH EUNICE

[Gas-oil ratios over 7,000]

Company lease	Well	S. T. R.	Ratio
Continental Oil Co.:			
State E	3	17-22-36	9,983
Gulf Oil Corporation:			
Day	1	6-22-36	22,738
Do	2	6-22-36	17,615
Do	4	6-22-36	39,217
Midcontinent Petroleum Corporation:			
Boren	2	20-22-36	9,637
Oil Well Drilling Co.:			
State	1	16-22-36	23,000
Repollo Oil Co.:			
State "157"	1	9-22-36	18,200
Sun Oil Co.:			
Record	1	22-22-36	21,050

SOUTH LOVINGTON

[Gas-oil ratios over 2,000]

Company lease	Well	S. T. R.	Ratio
Magnolia Petroleum Co.:			
State R	1	1-17-36	1,616

Field summary—Continued

VACUUM FIELD

[Gas-oil ratios over 2,000]

Company lease	Well	S. T. R.	Ratio
Magolia Petroleum Co.:			
St. Bridges	4	26-17-34	3,280
Do	19	24-17-34	3,001
Do	21	23-17-34	2,618
Phillips Petroleum Co.:			
Santa Fe	6	21-17-35	3,027
Shell Oil Co.:			
State G	1	22-17-35	2,613
Texas Co.:			
State L	1	1-18-34	5,741
Whitmire	3	8-20-37	16,011
Repollo Oil Co.:			
Baker	7	8-20-37	13,992
Do	4	8-20-37	8,400
Phillips A	4	31-19-37	20,420
Republic Products Co.:			
Maveety	1	35-19-36	11.841
Do	2	35-19-36	11,841
Shell Oil Co. Inc.:			
Foster	1	34-19-36	6,911
Stanolind Oil & Gas Co.:			
Gilluly A	2	24-20-36	7,352
Gilluly B	2	21-20-37	57,993
Sun Oil Co.:			
Barr	1	24-19-36	23,750
Maveety	1	35-19-36	7,270
Do	2	35-19-36	8,450
Do	4	35-19-36	18,750
Do	5	35-19-36	10,900
State	2	25-19-36	6,480
The Texas Co.:			
Saunders	1	18-19-37	8,729
Do	3	18-19-37	6,319
State J	2	24-19-36	19,100
Weir	1	25-19-36	21,960
Do	2	23-19-36	13,950
Two States Oil Co.:			
Etcheverry	2	10-20-36	61,471

PENROSE FIELD

[Gas-oil ratios over 7,000]

Amerada Petroleum Corporation:			
Corrigan	1	4-22-37	10,000
Continental Oil Co.:			
Elliott A	2	15-22-37	24,487
Do	1	21-22-37	9,195
Do	1	22-22-37	11,724
Elliott B	1	6-22-37	17,978
Do	3	6-22-37	31,105
Do	1	9-22-37	40,313
Gulf Oil Corporation:			
Baker	1	5-22-37	11,463
Do	2	5-22-37	16,503
Gulf Oil Corporation—	1	16-22-37	15,625
Continued.	1	4-22-37	14,166
Cole State A	1	5-22-37	9,396
Rinewalt	2	5-22-37	9,920
Stebbins	1	4-22-37	7,558
Do			
Stitcher	1	5-22-37	13,911
Ohio Oil Co.:	2	5-22-37	13,896
Grizzell	1	21-22-37	8,912
Do			
Walden	1	21-22-37	9,400
Parker Drilling Co.:			
State			

Mr. COLE. Do you have a copy of the bill before you?

Mr. SCHILTHUIS. Sir?

Mr. COLE. Do you have a copy of H. R. 7372 before you?

Mr. SCHILTHUIS. No, sir.

Mr. COLE. If you will get one, and turn to section 5 on page 5 of the bill; section 5 (b), (1)——

Mr. SCHILTHUIS. What page is that?

Mr. COLE. Page 5, section 5 (b), (1) and (2). Do you find any fault with the definitions of physical waste of crude oil and waste of reservoir energy as contained in these two paragraphs of the bill?

Mr. SCHILTHUIS. I made the statement in my main paper that the nature and the causes of physical waste of oil and gas which I discuss in the paper are in substantial agreement with the definitions of the nature and causes of waste that are contained in H. R. 7372.

Mr. COLE. I thought you had. You have studied the bill before. With your experience and admitted ability, you suggest no substantial changes in the language of the bill; that is, these particular sections?

Mr. SCHILTHUIS. With reference to the definitions of the nature and causes of physical waste in this section, I do not think that I have any substantial disagreement.

Mr. Cole. Very well; how about section 6 (b), (10) and section 6 (c), (1) on page 10:

> The operation of any flowing well producing either crude oil or natural gas, or both, substantially at its open-flow capacity.

Do you have any criticism of that? I understood you to say in your paper that the most wasteful method of production was the wide-open flow. Is that somewhere in your paper?

Mr. Schilthuis. Ordinarily, wide-open flow contributes to the maximum amount of waste.

Mr. Cole. Then you are in agreement, I assume, with the language of the bill I have just pointed out?

Mr. Schilthuis. I do not see exactly what it refers to.

Mr. Cole. Does not that refer to wide-open flow?

Mr. Schilthuis. Yes; but the sentence is incomplete. I presume it is referring to what constitutes a wasteful condition of operation.

Mr. Cole. Yes; I thought that you had been over it.

Mr. Schilthuis. I have been over it, but I am not in a position to discuss the bill in detail. I am willing to make the statement that I think the definitions given therein as to the nature and causes of physical waste are in substantial agreement with my thoughts on that matter.

Mr. Cole. I think that is all, Mr. Schilthuis. Thank you.

Mr. Schilthuis. May I make one more comment in connection with my estimate of the oil waste that will ultimately occur under current operations, if continued, in my territory?

Mr. Cole. Yes, sir.

Mr. Schilthuis. I would like to point out that the great bulk of the 13,000,000,000-barrel reserve located in my territory is contained in fields that are well regulated in which there is practically no waste whatever. The waste that I have estimated is confined to a very few field, accounting for only a small part of the reserves.

With reference to the figures on known reserves and the part that connate water and shrinkage play in the estimates, Miller and Shea, in their testimony before you, I believe said that they did not have the information at the time as to whether or not connate water and shrinkage of the oil were taken into account in the figures on known reserves carried at that time. They went on further to say that they did know, to their own knowledge, that a great many of the companies do take these factors into account. In this connection, I would like to repeat again that the estimates on the currently known crude oil reserves in this country do take these factors into account. They take them into account either directly or they take them into account indirectly through applying the actual field experience of the past in the estimation of the recoveries, which automatically considers them. Now, as a matter of fact, in the estimation of crude oil reserves, there is always a considerable amount of conservatism applied. It is just a natural thing. Hence, if anything, the now known crude oil reserves are even greater than the estimates show. I do not think that there is any question about this, because from year to year we find it necessary to raise our estimates in the light of new information on the fields already in production.

I would like to leave the thought with the committee that there is nothing wrong with the current estimates of known crude oil reserves.

Mr. Cole. All right, sir.

We have a call of the House. We will have to answer the roll.

Mr. Greever, do you want to be heard today?

Mr. **Greever.** Mr. Chairman, I would like to be if it does not interrupt the regular course of procedure in any way. My statement is short and it will not take long.

Mr. **Cole.** Yours might be the only interruption to the schedule. I understand that you want to leave today. According to the program of the industry we are to hear Mr. Millikan, I believe.

We will take a recess for 15 minutes to answer the call of the House and will be back to hear Mr. Millikan.

(After a short recess, the following proceedings were had:)

Mr. **Cole.** The committee will be in order. Mr. Millikan, we will hear you at this time.

Mr. **Millikan.** Mr. Chairman, I am very glad to yield to Mr. Greever.

Mr. **Cole.** We will hear Mr. Greever at this time and hear you this afternoon.

STATEMENT OF HON. PAUL R. GREEVER, CODY, WYO.

Mr. **Greever.** Mr. Chairman and gentlemen of the committee.

Mr. **Cole.** The committee is glad to see Mr. Greever, a former Member of the House.

Mr. **Greever.** Thank you.

Mr. Chairman, this is a topic that I have followed quite closely.

My name is Paul R. Greever. I reside at Cody, Wyo., and my profession is that of lawyer. At this hearing I represent the Rocky Mountain Oil & Gas Association. This association is composed of producers and refiners of the Rocky Mountain States, and most of the producers and refiners out there whether they be large or small, belong to this association or are connected with it in some way.

I have had a little experience in the oil business—not in any technical way nor am I prepared to give any technical discussion of this matter at all, because most of my connection with the business has been in a legal way, although I have been personally interested in the actual operations in that area.

When I came to Cody, Wyo., in 1920, the oil and gas leasing act, known as the act of February 25, 1920, which is the act which provided for the drilling and exploring upon public lands was just then going into effect and supplanted the old placer laws that we had had up to that time. I had considerable experience with the legal problems presented by reason of the new provisions of the law relating to operation upon Government lands and became interested in the theory of the Government operation of oil lands, and, of course, under that bill these lands were under the supervision of the Geological Survey of the Department of the Interior.

Later on I served 4 years in Congress, and in connection with the passage of the amendments to the Oil Leasing Act, known as the O'Mahoney-Greever bill, which was introduced at the request of the Department of the Interior, and I had an opportunity to hear discussions both from the standpoint of the Department of the Interior and the industry relative to the management of the oil and gas lands by the United States Government and a full discussion was had at that time both by the Department of the Interior and the industry, and so this particular subject is not by any means an entirely new one to me.

I want to take this occasion to thank the Chairman and the members of the committee for the very kind and considerate treatment that they have given to the members of the industry here—and I have heard many expressions of that kind since I have been here during the last few days.

As I say, I cannot make many observations at all as to any of the technical aspects of this matter. I do not feel I am qualified to do it. I sat upon committees many times and listened to statements from the various industries that were affected by certain legislation, and while I am not qualified to discuss this subject from a technical standpoint, possibly I can make a few practical observations that might interest the committee in their consideration of this bill.

I noticed a good many times when I was in Congress and serving upon the Public Lands Committee, a disposition on the part of the Government bureaus to regard everyone connected with the oil industry as sort of malefactors of great wealth or economic royalists, and, that these people automatically produced a stream of golden dollars out of the ground without much energy and without much ingenuity, and with very little capital; and now if I may correctly judge what I have read in this bill these bureaus are asking Congress to declare that great waste exists and in the guise of conservation and national defense to proclaim an emergent condition requiring the eventual control of the industry by Government agencies.

First, I want to say to the committee that there is no industry which has more heartbreaking economic aspects than in the discovery of oil fields. It is only by courage and ingenuity of the highest type that the fields of this country have been developed. They have been developed by men who had the courage and ingenuity to go out and invest their capital and risk everything they had in bringing about a great and very important industry to this country. Scientific knowledge alone cannot discover oil, and no scientific knowledge can accurately determine the present and amount of oil and gas at all times. The drill is the only sure method of finding out where the mineral lies and whether it is in commercial quantity, and that is an expensive process and everybody who is connected with that industry who has really done anything constructive in it has had to display a lot of courage and a lot of ingenuity.

Today, of course, the mere discovery of oil does not assure that man has found a fortune by any means. Economic factors of all kinds beset him, such as available markets and quality of the oil, and transportation.

Population factors have made the oil industry—and this is particularly true of the section of the country which I represent—requiring the very best of business methods, the finest production methods, the clearest figuring of production cost, and I know of no industry whose business and production methods have so improved in the past 2 decades.

New machinery and new inventions and applications of scientific principles, and I think that generally in the areas I have had an opportunity to observe, that everything possible to avoid waste has been done. The oil industry in the State of Wyoming and throughout the Rocky Mountain States has been carefully and economically conducted. It is one of the largest and most important businesses in that section of the country and even in times of great depression has given employment to a great number of our people. I do not have the figures here, but, of course, if the oil industry in the State of Wyoming, and to some extent that is true in Montana, and in a lesser way perhaps in Colorado; if it were not for the oil industry in those States, we would have a very serious problem there at the present time in the question of unemployment.

Relief problems would be trebled and there would be many business men who would be compelled to close up their places of business, if it were not for this industry.

Careful operation in accordance with best known engineering principles in areas such as Wyoming is not only a matter of conformance to prescribed rules and regulations, but a matter of absolute necessity to continue in existence, a fact which any economical operator will not dispute.

Government agencies have laid great stress upon waste of oil and gas. Of course there is bound to be some waste in any industry, but it has been my personal and almost daily observation for 12 years that there is no industry which has made more progress in the prevention of waste than has the oil industry. A farmer does not waste his wheat because he cannot afford to do so. An oil or gas producer does not waste his oil or gas for the same reason, if he is going to stay in the business very long and be an economic—a sound economic—factor in the business and in his community. A refiner of oil cannot waste his products; otherwise, he would wind up in the bankruptcy courts.

In reading the supplemental report of the Secretary of the Interior relative to specific instances of waste, on page 74, he cites a gas well in the Garland field which is in Big Horn County, Wyo., as an example of gas waste. That is near where I live, at Cody, about 35 miles east.

Mr. Cole. I was through there this summer.

Mr. Greever. You were at Garland, Mr. Chairman?

Mr. Cole. Yes.

Mr. Greever. Well, there was a gas well there and that is probably the same gas well as the one mentioned here. I do not know whether the chairman happened to see that well or not, but the truth of the matter is that it produces a highly poisonous gas. A young boy who was raised up with my children happened to be working on this lease, and he was killed by the poisonous gas from this well. It is a gas that they simply cannot work around and has to be taken care of in some way in disposing of it so that it will not be fatal to those who are near it.

On page 72 of this same report it is implied that wells in the Medicine Bow field in Carbon County, Wyo., are being produced at excess gas-oil ratios and wasting reservoir energy. Now, over half of this land in this field is Government land and land already under the supervision of the Interior Department and it just seems to me that it is slightly inconsistent for the Department to urge this example as one of waste, in a hearing upon a bill designed to further the control of the Interior Department over the oil and gas industry. The fact is that there is a wide divergence of opinion among competent petroleum engineers as to whether or not there is waste in the Medicine Bow field. Actually the gas taken from Medicine Bow is used to repressure a much larger field several miles away. So, it cannot be conclusively and positively shown that there is any waste whatsoever.

The Lance Creek Field, also in Wyoming, is also cited as an instance where waste occurs. Here again competent engineers are not fully in agreement with the Department. If, as indicated in the report, waste occurs on those lands now subject to the control of the Interior Department, how could we confidently expect any improvement of production conditions if all lands were placed under their control?

As far as the complaint about the Big Piney structure is concerned, I do not know anything about it, because it is located in a high mountainous area with which I am not familiar.

No one can present facts and figures enough to make me believe that a Government agency can control the oil industry or run it with half the efficiency of the operators with long years of experience behind them, no matter how sincere, how hard working or how scientific they may be.

Every field is a separate problem; every well is a separate problem, and how it is that it can be assumed that Government regulation is the answer, is beyond me. This is the province of the States, and many States have comprehensive laws, all of which are functioning properly today.

I might say at this point, there is a feeling today out through the western country—and I believe that exists over a great portion of this country, and with due consideration to Congress, and with due consideration to the administrative representatives of the people—there is a feeling today among the people in all walks of life that Government regulation has gotten to the place where it has become oppressive.

If we were to make a business survey today and asked the question, "Why aren't you expanding your business?"—some people are not expanding their business that possibly could—they would say, "We are afraid of Government regulation."

Many of them feel and they are bewildered with regulations; they are bewildered with the various reports that have to be made on account of certain requirements of law.

The community in which I live is just a small, average American community and I know everybody there just as you know the people in your town. I know the banker, the merchants, the laborer, the oil producer, the refiner, and the professional man. I talk to neighbors, you talk to people in your towns. They don't want any further Government regulation. They want a lot less of what they already have. They don't want some bureau official running their business. They have said, "Are we going along the paths of other nations whose democratic ideals have perished, or are we still to have freedom of thought and action; freedom of development, guided by sane economic factors?" Regardless of political faith, this question of bureaucratic control is uppermost in the consciousness of all of our people today.

I want to refer to one part of the bill in which I think any student of jurisprudence could not fail to find offense in the provisions of section 15 of the act which Judge Hill referred to yesterday so aptly as "monstrous." If I read the provisions right, it makes the obtaining of justice through the courts so difficult and so expensive as to almost preclude a producer of modest means from even attempting to obtain justice. The provisions as to the facts found by the Commissioner as being conclusive and the Commissioner not being bound by the ordinary rules of evidence make him a virtual dictator of the industry. He is a judge of what is substantial evidence and his findings, according to the bill, are absolutely conclusive upon that point. Furthermore, he is to determine which cases he shall prosecute and which he shall ignore. I cannot understand why the appeal should be made to the circuit court of appeals in the first instance and that an appeal could not be made to the United States district court, which is the convenient court, in our country, where we are long distances away, of course, from where the circuit court sits.

Mr. COLE. Mr. Greever, would you expect the courts of this country to try de novo all these administrative decisions? I think it is just as objectionable to the members of this committee as to you to give administrative boards more authority than they should have. I think some correction of existing law will be made before a great while; but to carry your thought through to its logical conclusion, if you are going to permit trial de novo of all cases pending before the many administrative bodies we have, without some line drawn as to what shall be conclusive, you are going to require a lot more judges. In most of the States, for instance, our public service commission cases and our accident commission cases, ignore the technical rules of evidence and very often lawyers are not participating on both sides; the cases are heard before examiners, and then in addition to the commission waiving the technical rules of evidence, their decisions are binding on the court to a great extent; are they not? I have asked two or three questions in one.

Mr. GREEVER. Their findings of facts, of course, like the finding of what is an emergency, is a question for the Board's decision; but I was thinking in terms of the fact that our circuit court of appeals is a long distance from our oil fields in our particular country. Perhaps I am thinking more of geography than I am of the logic of this requirement in the bill; but we, like you, go to our local Federal court and try the matters there rather than the more expensive procedure, of course, of going to the circuit court of appeals in the first instance as an appeal. That is what I had in mind.

Mr. COLE. But what you are opposed to primarily is to bringing to the District Court of the District of Columbia too much litigation which properly belongs in the respective Federal districts?

Mr. GREEVER. Yes.

Mr. COLE. I am with you on that.

Mr. GREEVER. Yes; that is the thought which I have in mind.

Mr. COLE. I do not want to bring any more litigation here than rightly should be before the District of Columbia courts.

Mr. GREEVER. I object to it for that reason, and also the other reasons I have stated.

The people whom I represent, the members of the Rocky Mountain Oil and Gas Association, have asked me to say to this committee that they unanimously oppose any further control of the oil industry by the Federal Government, and respectfully ask the committee that this bill be not passed. They feel, and I think rightly so, that the industry being subject already to sufficient restriction under State and Federal laws and also subject to so many taxes of various kinds, that control which would be given under this bill would be to add not only additional expenses and additional taxes, but additional restrictions to an already overburdened industry.

I thank you very much, Mr. Chairman.

Mr. COLE. Thank you, Mr. Greever.

We will hear Mr. Millikan.

STATEMENT OF C. V. MILLIKAN, AMERADA PETROLEUM CORPORATION

PROGRESS AND PRESENT STATUS OF PETROLEUM CONSERVATION IN THE ROCKY MOUNTAIN AREA, KANSAS, OKLAHOMA, AND ARKANSAS

Mr. MILLIKAN. My name is C. V. Millikan. I am a graduate of the Oklahoma Agricultural and Mechanical College and of the University of Pittsburgh. My experience includes about 3 years of valuation and geological work in the Appalachian fields. Since 1922 I have been employed first as geological engineer, and since 1926 as chief engineer for Amerada Petroleum Corporation, a corporation whose business is exclusively that of finding and producing crude petroleum. My work has been largely confined to the States in which the company operates producing leases—Kansas, Oklahoma, Arkansas, Louisiana, Texas, and New Mexico—but has included occasional investigation in other areas.

The area discussed in this report is composed of the Rocky Mountain States—Montana, Wyoming, and Colorado—and the States of Kansas, Oklahoma, and Arkansas. This area has a total proven reserve of about 2,437,000,000 barrels[1] which is approximately 13 percent of the total reserves in the United States. The current production is about 748,000 barrels[2] which is approximately 20.7 percent of the current production of the United States. Of the 748,000 barrels daily current production, about 486,000 barrels, or about 65 percent, is from fields in which the production is restricted for conservation purposes, principally by conservation authorities, but in the Rocky Mountain area it is voluntary on the part of the producers. The remaining 262,000 barrels is, with the possible exception of a small amount of production in the Rocky Mountain area, from stripper wells not subject to control by any present or proposed law.

Conservation in the petrolum industry is designed to reduce waste of natural resources. Waste is loss of oil or gas. This loss may by on the surface by evaporation or seepage, or underground by movement to formations from which it cannot be recovered. Losses may result from development and production practices which will not result in maximum recovery. There may be direct economic losses by excessive development and production costs. While the public is primarily interested in conservation of natural resources, economic losses may be of interest. When excessive development and production costs are limited to a few companies the public is not concerned but if such practices are general throughout the industry that increased cost must be passed on to the consuming public.

First regulation of oil-field development operations was enacted by States to provide for proper drilling, completion, and plugging abandoned wells. It was directed at preventing loss of oil and gas to nonproductive sands or migration of water from water sands into oil and gas sands. From this modest beginning the laws and regulations were expanded and finally included regulation of production. The latest laws recognize each operator's equity in the pool, not only in the oil and gas but in the energy that moves the oil out of the reservoir.

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[1] Oil Weekly, January 29, 1940.

[2] American Petroleum Institute, average 4 weeks ending February 10, 1940.

There was an occasional attempt or agitation for gas conservation by regulating the amount of gas produced with the oil, but the only conservation was that accomplished by better completion methods to reduce the wasteful depletion of a gas horizon. The value of gas as a recovery agent for the oil was not yet appreciated. Fields which had large gas caps and therefore had most to gain by gass conservation were much less numerous than now. Until a time when the value of gas as a recovery agent, as well as a natural resource, was recognized there was not much incentive on the part of the State, the public, or the producers to provide regulation. In fact, the state of knowledge at that time would not form the basis of a sound statute and its intelligent administration.

Restriction of oil production had been attempted occasionally, since the early boom days in Pennsylvania, but not until 1926 was there successful restriction, and then sufficient only to bring the current production of the fields within the capacity of pipe lines. Crude and unstudied as it was, it contributed to saving millions of barrels of oil that would otherwise have gone into storage, into open pits, or even into streams. Such waste, approved by none, but practiced by all by necessity of protecting their interest, was common in all fields, and if it did not exist it was because the field was not big enough to create such conditions.

Proration was instigated by the operators and had the sanction of the State authority but there was much uncertainty regarding the extent to which such authority could restrict the rate at which an operator would produce his wells. There was, with few exceptions, ittle thought as to how such restriction might contribute to greater ultimate recovery from the pool. Not long before, it was the general opinion that restricting the rate of production from a well would reduce the ultimate recovery and perhaps ruin the well, this in addition to oil that might be lost by drainage to other wells. Now, however, such opinion was less strong and probably most operators would accept the theory that restricting production would not hurt the well but as yet could not agree to a theory that restricting production would increase ultimate recovery. It could be only a theory because there was nothing more than a few laboratory experiments and casual field observations to substantiate it.

Restriction of production to pipe-line capacity did not require long to prove that it not only did not damage the wells but in many fields actually helped them. The theory that restriction would retard water intrusion was proved, especially in some lime reservoirs. Operators could follow a more conservative development. Until there was restriction and equitable allocation of production there was no incentive for operators to complete or repair wells to prevent production of gas from a gas cap. Reservoir pressure could be maintained by restricting withdrawal of oil and gas to the rate at which water could replace it. Keeping gas in the reservoir conserved gas as a natural resource, as a source of energy, and maintained pressure in the reservoir. Maintaining a high reservoir pressure provided a longer flowing life and consequent lower producing cost.

Restrictive laws are designed to prevent or reduce trespass on public interest. The first laws are general and cover only the most obvious trespass. Knowledge gained from the first restriction provides a basis for still further restriction. Such has been the development of conservation laws. The first laws provided only for control of drilling, completion, and plugging. The statutes were revised as development of advanced practices and experience of administration warranted. The first restriction of production was voluntary. The knowledge and experience from limited restriction paved the way for more comprehensive and equitable conservation laws, and their competent administration.

A conservation law in order to accomplish its purpose must have the support of the public and the industry and have adequate and competent administration. Probably without exception, every petroleum conservation law has been passed with the sanction of a majority in the industry, and the active support of many. As the value of conservation practices became more generally recognized operators willingly submitted to and encouraged stricter and broader conservation laws. Present State laws provide for enforcement of all the conservation practices that the present knowledge of science and field operation can justify. As improved operating practices are developed that will obtain even greater recovery, then in the future as in the past, revision of the statutes can be anticipated with approval of an increasing majority of the industry.

It is believed that the most reliable indication as to what the petroleum industry and the conservation authorities will do about conservation is the progress they have made in the past and the attitude at the present time. Best judgment can be made of the present attitude of the industry and the conservation authorities toward conservation when the developments which have led to that attitude are understood. The attempt is made in this statement to give for each State, by cases, the development of conservation from the early period of complete disregard into a period of indifference to waste, then the successive stages of interest, passive submission, into the initiative cooperation of the present.

ROCKY MOUNTAIN

The Rocky Mountain area as discussed in this report is limited to the States of Montana, Colorado, and Wyoming. This area has long been considered promising for oil and gas production, and development has been delayed because of a limited local market and distance to areas of greater consumption. Each of these States has conservation laws, but they are hardly comparable in their requirements or administration to the laws of a majority of the States producing an appreciable quantity of petroleum. Such laws have not been required. With only a few exceptions the operators have followed the best operating practices and conservation principles in developing and producing the various fields.

MONTANA

Montana has an estimated proven reserve of 125,000,000 barrels [3] and a current daily average production of 17,100 barrels,[4] which is about 0.7 percent of the estimated proven reserves of the United States and 0.4 percent of the average daily production of the United States. The 2 principal producing fields are Cutbank, with a daily average production of about 10,600 barrels, and Kevin-Sunburst field, with a daily average production of 4,600 barrels.

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[3] Oil Weekly, January 29, 1940.

[4] American Petroleum Institute, average 4 weeks ending February 10, 1940.

The oil and gas possibilities of Montana have been considered for many years. First commercial production of gas was on the Baker Glendive dome in 1915, and in this same year the Elk Basin field was extended from Wyoming into Montana. Cat Creek was discovered in 1920. It is producing from a sand formation with a very small amount of gas and a limited water drive which affected only a few edge leases. Kevin-Sunburst was discovered in 1922, and produces from the Madison limestone at about 1,500 feet. The producing formation is very erratic which resulted in several very good wells, and intermingled among the approximately 1,200 producing wells there were numerous dry holes. Some of the edge properties have a good water drive, but for the field as a whole the natural water drive is not effective. The amount of gas associated with the oil is very small. The Pondera field was discovered in 1928 and produced from Madison limestone at about 2,000 feet. The wells are not large. There is practically no gas or water.

Cutbank was discovered in 1928, producing from Kootenai sands at about 2,800 feet. These sands are lenticular and conditions vary from well to well. In the high part of the monocline the sands contain gas and down dip produce oil. Some of the wells are producing with fairly high gas-oil ratios, but on the whole the operators have so completed and operated their wells that the amount of gas wastage is not excessive.

The Montana conservation law is not broad, but in its administration they have been particularly emphatic about the waste of gas. This no doubt contributed to influence any operator who might have been inclined to be careless on completion of his well to see that it is completed and operated with the minimum gas-oil ratio.

COLORADO

Colorado has an estimated proven reserve of 16,750,000 barrels[5] and an average daily production of 4,450 (5) barrels, which is 0.12 percent of the reserves and 0.1 percent of the average daily production of the United States.

Some oil has been produced in Colorado since 1861, but it has not become important among oil-producing States. There are at present about 200 producing wells, half of which are in the old shallow Florence field. Almost half of the current production is from the Iles dome in Moffat County. In the Iles and Moffat fields the oil reservoirs have a good water drive. The Wellington oil field had a gas cap. Some of the fields have gas sands above the oil production, but none of the oil producing formations in the various fields except Wellington has a gas cap, and all oil production is with a low gas-oil ratio.

The Colorado conservation law was passed in 1915 and covers conservation to the extent that—

> it shall be unlawful for any person * * * to allow or permit the flow of gas or oil from any such well to escape into the open air * * *.

Although there is no regulation of oil production in the State, operators have recognized the advantages of conservation and have drilled, completed, and operated the wells in all fields to obtain production by the best conservation engineering practices.

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[5] Oil Weekly, January 29, 1940.

WYOMING

Wyoming has an estimated proven reserve of 310,000,000 barrels [6] and an average daily production of 64,300 barrels [7] which is 1.6 percent of the reserves and 1.78 percent of the average daily production of the United States.

Wyoming has been producing oil for over 50 years, but not until 1908 did it attract much attention, and it was 1912 before it was producing enough oil to become important in the industry. The Salt Creek field was discovered in 1908, and intensive development was started in 1912. This production was from the First Wall Creek sand at a depth of about 1,000 feet. The field had continuous development by opening and developing continuously deeper horizons until after 1930. The deepest producing formation is the Tensleep at about 3,975 feet. The Second Wall Creek sand was discovered in 1917 at about 1,500 feet, the Lakota sand at 2,300 feet in 1924, the Sundance at 2,800 feet in 1925, and the Tensleep at 3,975 feet in 1930. The Wall Creek sands had more gas associated with the oil than the deeper sands, but there was no gas cap. Since 1927 all casinghead gas produced in the field except that used for fuel has been returned to various formations in order to conserve gas, maintain pressure, and obtain the advantages of gas drive. There was no water drive in the Wall Creek sands, but there is some water drive in the Lakota sand and a very effective drive in the Sundance and Tensleep reservoirs. About 80 percent of the field has recently been completely unitized and brought under one management. This will make possible the redistribution of the gas returned to the reservoir to obtain better advantage of the pressure maintenance and gas drive, and will reduce operating expenses to obtain a longer life and thereby greater recovery from small wells. This field has thus far produced a total of about 288,000,000 barrels, and has a probable reserve of some 45,000,000 barrels.

The Oregon Basin field first produced oil in 1926. There is gas production in some of the upper sands, but the oil production is from the Embar-Tensleep at about 3,500 feet. Development and production has been considerably retarded because of the low gravity of the oil and the distance to market. The reservoir has no gas cap, but will likely have a good water drive.

Lance Creek field was discovered in 1915. Production was from the Dakota sands at about 3,000 feet and produced a light oil with considerable gas. The field was small in area and from common practice little attention was pair to conservation. Sundance production was discovered in 1930 at about 3,500 feet. This formation has a gas cap and a limited water drive. Most of the producing area has since been unitized and a pressure maintenance program is in operation. Production in Pennsylvania sands at about 5,000 feet was discovered in 1936. Development has not been extensive in the Pennsylvanana reservoir, but it appears to cover an area of some 4,500 acres. There is no gas cap, but further development will probably prove the presence of an active water drive. A number of leases in the field are on Government land and under supervision of the Department of the Interior. The operators in the Lance Lake field have been conscious of the advantages of developing and operating according to the best conservation practices, and have followed these practices quite rigidly regardless of what encouragement or demands might otherwise have been placed by regulatory bodies.

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[6] Oil Weekly, January 29, 1940.

[7] American Petroleum Institute, average 4 weeks ending February 10, 1940.

These three fields discussed constitute about 60 percent of the present proven oil reserves and 66 percent of the average daily production of the State of Wyoming, in a total of about 80 fields. The conservation practices in the other fields are similar to those described above. The Wyoming law provides that the rules and regulations as promulgated by the Department of the Interior on control of operations on Government lands shall also apply to State and patented lands as State law. Their statute on the conservation of gas is more complete. Wasteful practices in the State are reduced to a minimum by the natural restrictions of available market and the fact that with few exceptions the operators are well established in the business of producing oil and gas and fully recognize the economic advantages of practicing conservation in the development and operation of oil fields.

The Rocky Mountain area as a whole has had less wasteful practices in the development and operation of oil fields than any other major producing area. Most of the operators are progressive and fully understand the economic advantages of conservation practices. While the conservation laws are limited, and make no provision for proration, the limited market for crude petroleum combined with the most advanced development and operating practices has resulted in reducing the avoidable waste in the Rocky Mountain area to a minimum.

KANSAS

Kansas has an estimated proven reserve of 630,000,000 barrels [8] and a present average daily production of 175,000 barrels [9] which is 3.4 percent of the reserves and 4.8 percent of the average daily production in the United States. Of the 175,000 barrels daily production, about 125,000 barrels, or 71 percent, is prorated by conservation orders of the corporation commission.

First commercial oil production in Kansas was about 1890, but did not become important until after 1900. Oil development from 1900 to 1915 was active and extensive in the southestern Kansas area, but no outstanding discoveries or extensions to the producing area were made. Most of the production was shallower than 1,300 feet, only an occasional wildcat being drilled below 1,500 feet.

Kansas enacted its first conservation law in 1891 which provided for plugging abandoned wells. In 1901 this law was extended to prevent waste and required setting casing to protect gas and oil sands from being flooded by salt water. It was again revised in 1905 and included regulation of transportation of gas and some producing practices, including a limit on the amount of gas produced from a well. This law was revised in 1913 and again in 1919. Development and producing practices were under continuous improvement, and each revision was to give consideration to the best practices of drilling, casing, and plugging wells.

The Augusta field was discovered in 1914 and El Dorado in 1915, producing from the Arbuckle formation at about 2,500 feet. The peak of development was in 1917. Surface waste in the fields was small considering the extensive and hasty development. This was due to the fact that the absence of gas resulted in most of the wells not flowing, and the pumping capacity was not great enough to obtain a rate of production greatly in excess of the capacity of the pipe-line outlet. The reservoirs had a definite water drive. The industry did not recognize at that time that water drive could be controlled by controlling the rate of production. It was the opinion of a majority of the industry that if water was present it was desirable to remove the oil as quickly as possible in order to produce the greatest amount of oil before the well went to water. It was no doubt beneficial to the field that the wells did not flow. The total daily withdrawal was thereby limited by the capacity of the pumping equipment which was considerably below the rate of production that would have obtained had the wells been produced to capacity.

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[8] Oil Weekly, January 29, 1940.

[9] American Petroleum Institute, average 4 weeks ending February 10, 1940.

Development in the State during the next few years was concentrated in an area between the El Dorado and Augusta fields on the west and the older fields in the southeastern part of the State. Production was from sand lenses from 1,700 to 2,500 feet which had only a small amount of gas and no water drive.

Discovery of the Fairport pool in Russell County at about 3,000 feet in 1923 extended the possible producing area about 140 miles west. It was not a prolific field, but was quite important in the petroleum history of Kansas and created an extensive exploration campaign. During the next 5 years several additional pools were discovered in the area now classed as western Kansas. They were almost all producing from Carboniferous formations above the Ordovician which has since become the important producing horizon. The small wells and distance between pools did not encourage building pipe lines to them, and having no market, there was little development after discovery.

The Valley Center pool north of Wichita was discovered in 1928 with production from the Ordovician (Viola lime) at about 3,300 feet. This field was small in area, but was the beginning of the intensive phase of western Kansas development. By the middle of 1929 prolific production had been found in the Greenwich pool near Wichita, and in the Ritz and Voshell pools in McPherson County. These were the first important fields in several years which provided production in excess of pipe line capacity and were the first fields prorated in Kansas. Proration was entirely by agreement among the operators of each field, and was first put into effect in the Greenwich field in June 1929. The operators agreed to proration in the Valley Center pool in October and the Ritz and Voshell pools were prorated in November of the same year. Additional pools were discovered which extended the producing area farther west and north. Pipe lines were built to serve them, but fields were discovered and developed faster than pipe line capacity increased. As new fields came in they were prorated by voluntary agreement among the operators, and older pools were prorated to smaller part of their capacity to produce. The purpose of proration in each field was exclusively to reduce production to the capacity of the pipe lines serving the field.

In 1931 Kansas passed its first conservation law that authorized proration and allocation of production. It was fashioned after the Oklahoma statute in effect at that time, however, the Kansas law made no reference to economic waste nor to the necessity of allocation between common sources of supply. Except for those conservation practices which had been required for many years, it was primarily a proration law. The legislation recognized that it was better to keep the oil in its natural underground reservoir than to produce it and put it in above ground storage. If the oil was to be kept underground except as it could be marketed, then its rate of production should be on a basis that would give each operator his fair and equitable share. There is little evidence that the full significance of proration as an act of conservation was recognized.

In 1933 the law was revised recognizing proration as conservation, and defined waste to include production in excess of market demand or transportation. It was more specific in providing for enforcement of the law and of rules of the Commission made under the law. The law made no reference to spacing because it was not recognized that there was need for a spacing law. Since 1917, with few exceptions, wells were regularly spaced on 10-acre subdivisions of the United States land survey. Such had become the general practice of the industry and the only variations were the occasional town-lot development or cemetery wells. It was not yet recognized that the greater quantity of energy existing with deeper production and the more efficient use of this energy under a restricted rate of production would obtain as much ultimate recovery under a wider spacing as had been recovered under the closer spacing in shallower sands and higher rate of production.

The conservation law was amended in 1935 to bring it up to date with the progressive developments of drilling, producing, and conservation practices. It emphasized the correlative rights of land and lease owners, provided for a procedure for the disposal of the salt water produced with the oil, and for control of secondary recovery methods, particularly water flooding and gas or air repressure programs.

The spacing question came squarely before the Commission in 1937. An order was made for the Zenith pool establishing proration units and an allocation formula which included acreage. Shortly thereafter a similar spacing order was issued for the Geneseo pool. Although the statute did not specifically provide for spacing nor for consideration of acreage in the allocation, the Commission interpreted that inasmuch as the law provided for correlative rights by preventing unfair taking and unreasonable discrimination between properties that this could be accomplished only under a uniform spacing of wells in the common source of supply, and that inferentially they had the right to require uniform spacing or in the absence of uniform spacing to provide allocation which would accomplish uniform withdrawals over the area of the common source of supply. The effect of irregular or unequal spacing on waste was given equal consideration. Concentrated well spacing without consideration in allocation would result in concentrated withdrawals and be conducive to irregular water encroachment and increase gas-oil ratios, thereby creating waste. There was legal substantiation of this conclusion in the *Oxford case*) 32 Fed. 2d, p. 134).

Another revision of the law was made in 1939 to give consideration to all the accepted definitions of waste and correlative rights, including the authority of the Commission to regulate spacing and give spacing consideration in the allocation of production. Prior to 1939 the law had required that allocation be based on the potential capacity of the well to produce. The 1939 law while still holding this same requirement, by its wording recognized the possibility of determining a well's capacity to produce by means other than taking a full capacity production test. Prior to July 1937 the practice had been to require a full capacity production test for a minimum of 24 hours on every well in the State every 90 days. It was contended by many that producing the wells to capacity for such a length of time tended to cause waste by creating an excessive pressure decline near the well that would be conducive to intrusion of water. It also put an undue financial strain on the operators. Practically all of the wells had to be pumped and in order to take the maximum potential test it required an investment of pumping equipment of as much as $11,000 per well. If it were not necessary to take the potential tests, allowable from the wells could be produced with pumping equipment requiring an investment of some $3,000 per well, and in some cases less than $2,000.

Several fields accepted other means for establishing potentials. In the Richardson field a potential was taken on each well as it was completed. Subsequently, key wells were selected for potential tests and the potentials of other wells in the field declined in accordance with the decline determined on the key wells. In the Wellington field most of the wells flow natural, and the potential is taken by gaging the flow through a standard choke. In the Bemis and Zenith fields the potentials are determined by draw-down tests on the wells. In the Bemis pool these tests are made by determining the fluid level by instruments on the surface. When the fluid level has been determined at a few different rates of production, the full capacity of the well to produce is calculated. In the Zenith pool the bottom hole pressure is measured at different rates of production and from these data the open flow capacity of the well to produce is determined. Most of the new fields in Kansas in 1939 adopted the draw-down potential and the method is now almost universally used.

Kansas development during the past 10 years has been largely confined to an area of some 20,000 square miles in the central part of the State and in the oil industry is referred to as "Western Kansas." There are about 250 pools with about 5,600 producing wells ranging in depth from 2,500 to 4,500 feet. All of the prorated fields are within this area. More than half of the production and development is from Ordovician or older formations. The Arbuckle is the principal horizon, with some deep production from the Viola lime, Wilcox sand, and conglomerate or sandstone on top of the granite. The Kansas City-Lansing is the most widespread producing formation of the upper zone although some very good pools produce from the Mississippi Chat, Misener, and Hunton. Minor production also comes from other horizons.

Production from the Arbuckle, Wilcox, and Viola usually has only a very small quantity of gas associated with it and the reservoirs have a very effective natural water drive. The only exceptions are a few small pools. The Cambrian conglomerate and Reagan sand production is primarily gas with oil of secondary importance except in a few wells. The Otis and Gorham pools are the only important pools producing from these horizons. It is from the water-drive fields that Kansas proration has accomplished the greatest conservation. The restricted production has allowed a reasonable uniform advancement of the water to flood more completely the reservoir, thereby obtaining greater ultimate recovery.

The Hunton lime production usually has more associated gas than the Arbuckle, but the gas-oil ratio is never high. The reservoirs usually have a water drive. Burrton, Hollow-Nikkel, and Graber are the pools of importance. Zenith is the only pool of size producing from the Misener sand. The gas-oil ratio is about 400 cubic feet of gas per barrel of oil.

The Lansing-Kansas City and other younger producing formations contain a reasonable amount of gas and are usually produced with a gas-oil ratio between 1,000 and 2,000 cubic feet. There are, of course, some exceptions to this general condition. Most of the fields have no water drive or if present the water moves so slowly that it is not maintaining pressure even with the present very slow rate of oil withdrawals. All of the upper producing formations are lime except the Chat and the Misener sandstone.

The Mississippi Chat is an erratic producing formation extending over much of the area. The productivity, the amount of gas, and the amount of water are different from pool to pool. It is the major producing formation in five pools which are now under proration. These are the Ritz-Canton, Welch, Hollow-Nikkel, Wellington, and Burrton. The gas-oil ratio in Ritz-Canton, Welch, and Hollow-Nikkel was under 2,000 cubic feet. The gas-oil ratio in Wellington was originally about 3,000 cubic feet and increased with depletion. It was reasonably uniform over the field, and probably no method of completion or operation would have reduced the gas produced with the oil. Burrton-Chat production was discovered in 1931 but did not reach its peak of development until 1935. Many of the wells had a high gas-oil ratio, but allocation was on oil production only regardless of gas-oil ratio. Gas wastage was high. One statute provided for conservation and allocation of oil and another statute provided for conservation of gas. Both statutes were quite clear in provisions for protecting the correlative rights of the various tracts in a given pool. Could a high gas-oil ratio well be shut in or be appreciably restricted, while from the same reservoir, another well on a different tract be allowed full production when the difference was a natural condition over which the owner neither had nor reasonably could have been expected to have control? At that time there was no proven method of completing wells in a reservoir condition as existed in the Burrton Chat pool to obtain oil production without a large volume of gas also. Nor was there any proven method of repairing a high gas-oil ratio well by shutting off the gas with assurance that the oil production would still be obtained. An order was issued in January 1938 which limited the gas and oil produced by the field to their respective available markets. An allocation formula was contained in the order. The 1939 conservation law covers conservation of both oil and gas and with it the corporation commission is authorized to make such rules as may be required to provide adequate conservation when another such pool as Burrton-Chat is discovered.

The Otis field covers an area of about 16,000 acres in Rush and Barton Counties. Gas was discovered in 1930 and oil in the same reservoir in 1934. It is primarily a gas field. Considerable gas wastage in relation to oil occurred with the oil production for some time although since the oil production was small, the aggregate amount of gas wasted was a small part of the field reserves. The corporation commission issued an order in December 1937, which provided the method of allocation of both oil and gas and fixed a gas-oil ratio limit of 3,000 cubic feet. Later the commission made a ruling which increased the allowed oil production, but this was discontinued after the 1939 law was passed. In August 1939 the special allowable was reinstated by a temporary injunction issued by Federal court.

Wider spacing is being looked on with more favor by operators and the corporation commission. It is recognized that deeper reservoirs with more energy associated with the oil, and the lower rate of production under restriction, that just as much ultimate recovery can be expected from the pool as under closer spacing, and at the same time maintain equitable allowed production between tracts and afford more profit. A promise of more profit will encourage an operator to spend more to keep his wells in best producing condition. Wider spacing and consideration of acreage in the allocation will justify developing a number of pools that do not have enough recoverable oil to return the investment cost of closer spacing. The reserves of such fields would become available under the wider spacing where otherwise they would be lost.

The Kansas Corporation Commission is quite alert to the physical conditions of the fields in the State and are ready and willing to make such additional orders as are necessary to reduce avoidable waste to a minimum. Due to the limitations of the conservation law waste of gas and reservoir energy has occurred in a few fields, which under the present statute and present methods of completion and operation would not exist. I believe it is safe to say that a commissioner acting under H. R. 7372 would not be justified in issuing further conservation orders than those now in effect by the Kansas Corporation Commission.

OKLAHOMA

Oklahoma has an estimated proven reserve of 1,055,000,000 barrels [10] and a present average daily production of about 417,000 barrels.[11] This is approximately 5.6 percent of the proven reserves and approximately 11.5 percent of the average daily production of the United States. About 267,000 barrels or 64 percent of the average daily production is prorated by conservation orders of the corporation commission.

Some oil was produced in the Indian Territory prior to 1900, but not until 1901 after Red Fork, near Tulsa, was developed did the area produce sufficient oil to become a factor in the national supply. A few months later several fields of considerable size were brought in near Bartlesville The discovery well in the Glenn pool was completed in December 1905, and during 1906 the development became a hectic boom which extended through 1907. Most of the leases were on restricted Indian land which was under the supervision of the United States Government. Most of the production was from the Glenn sand at 1,700 feet, and many of the wells produced large quantities of gas with the oil, although in most of these the oil production would increase after flowing open for a few days.

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[10] Oil Weekly, January 29, 1940.

[11] American Petroleum Institute, average 4 weeks ending February 10, 1940.

At that time each operator had to care for his own production. Those few companies which had pipe lines ran oil from their own leases first, and if they still had pipe line capacity oil might be purchased from other operators. The result was that many thousands of barrels of oil were put in earthen storage and many additional thousands went into steel storage. In 1909 the law was passed which made common purchasers of oil pipe lines.

The first Territorial law having to do with conservation of oil and gas was passed in 1905 and considered only methods of plugging abandoned wells. This same law was made a State law when Indian Territory and Oklahoma were combined and became a State in November 1907. Plugging and casing requirements were necessarily made more strict in 1909, 1913, and at several times since. Each revision of the law recognized the advances in practices of casing and plugging wells in order to conserve oil and gas by preventing migration to other strata or prevent infiltration of salt water from adjacent sands which might damage oil and gas sands.

The Cushing pool was discovered in 1912 but did not become an important producing field until 1914. Many of the leases were on restricted Indian land under supervision of the United States Government. Principal production came from the Bartlesville sand at 2,800 feet although one deeper sand and several shallower sands in the aggregate were equally large. Cushing oil was a high gravity crude which was very desirable for refining. Many wells produced with very high gas-oil ratios, and all wells were produced at full capacity. It had been proved that as soon as the gas was exhausted from gas wells or high gas-oil ratio wells, they would produce more oil. The field was some distance away from any large pipe lines, and the first lines built into the field could handle only a small part of the amount of oil which was produced.

The Healdton field was discovered in 1913 and became an important producing field in 1914. Conditions similar to those in Cushing existed except there was much less gas associated with the Healdton oil and the oil was of low gravity. During the major part of the development only one pipe line served the field and its capacity was far below the capacity of the field to produce. Much of the oil went into earthen storage as it was not considered economical to build steel storage for such low-gravity oil.

The legislature passed a law in 1915 which was far in advance of any law which had thus far been passed in any State regarding control and conservation of oil and gas in field operations. This law defined waste to include all of the recognized wasteful practices such as improper casing off of water sands, allowing two or more producing horizons to produce through the same pipe, and others; and in addition defined waste to include economic waste and considered any storage as wasteful, particularly earthern pit storage. It gave authority to the corporation commission as administrator of the law to limit production and required pipe lines to take from all producers in proportion to their potential production.

Shortly thereafter the commission made rules to govern operations and allocation of oil in the Healdton field. The most important of these rules provided that no additional oil should be placed in earthen storage and the amount of oil which could go into steel storage was limited. It provided for taking potentials on wells, and limited the amount of oil to be produced to market demand. Market demand, however, was not defined. The allocation of production to each well was based on its potential. It also specifically provided that the production from the wells was to be limited as distinguished from the amount of oil to be sold. These rules were made after extensive testimony from a large number of witnesses and through consideration on the part of the commission.

The commission proceeded to make an extensive set of general rules for the operation of oil wells, setting casing, plugging wells, etc. They were State-wide in their application in the absence of rules which might have direct application to a particular field or pool. These general rules were quite definite in their requirements and showed a thorough and complete study of the problems on the part of the commission.

One of the deficiencies in the 1915 law was the provision for the execution in the field of conservation rules which were issued by the commission. In 1917 this was remedied by an amendment to the law which provided for the appointment of a conservation agent, and made more definite the conservation rules, particularly regarding setting casing, and protecting commercial oil and gas sands. The general conservation rules that had been promulgated under the 1915 law were revised and expanded and their administration put under the supervision of a conservation agent under the authority of the corporation commission. This was the first time that conservation rules were effectively administered. Field inspection of drilling and plugging operations was made consistently to see that the law and the rules were complied with.

During the next few years several important fields were developed but except from some temporary over-production, they were operated with little waste except that caused by open-flow production which was accepted as the best practice at that time. The Hewitt field in the southern part of Oklahoma was opened in 1919 and had an intensive development through 1920 and 1921 in a sand at about 1,500 feet. The Burbank field was developed from 1921 through 1924. This was a large prolific field producing from 2,800 feet. The gas-oil ratio was low and there was no water drive. Most of the pool was in Osage County which was Indian land and under supervision of the United States Department of the Interior. Development was retarded by availability of leases which were acquired at lease sales held at intervals. Development progressed only as leases were sold. The Tonkawa field was developed in 1922 and 1923 in several sands from 1,700 to 2,500 feet. This prolific light oil field was also produced at full capacity, but there was no excess gas produced with the oil nor was there a water drive, and unless the fact that the field was produced at full capacity did in itself constitute waste, there was no excessive waste. Pipe lines were taxed to capacity, but on the whole were able to handle the oil. This field had another peak of development in 1925 from the Wilcox sand at about 1,000 feet. It had no gas cap but did have a natural water flood.

The Cromwell pool in central Oklahoma was developed in 1924 at 3,500 feet. Several leases were on restricted Indian land and under supervision of the United States Department of the Interior. It had a large prolific gas cap but no effort was made to conserve the gas. The waste of natural gas as a natural resource was recognized, but at that time comparatively few in the industry recognized and accepted the possible value of the energy in the gas as a recovery agent. Had some action been taken by the commission to conserve the gas, it might have been sustained by the courts, but in view of the State knowledge of reservoirs and reservoir energy at that time it is doubtful that sufficient weight would have been given by the commission or by courts to the argument that to retain the gas in the formation would materially increase the ultimate recovery in the field to sustain the order. Also at that time the law of capture would have been given much more consideration than under similar conditions today. To have shut in the gas wells would have completely shut off the income to some operators and royalty owners to the benefit of other operators and royalty owners in the field. The axiom of today that each owner is entitled to his fair share of ultimate recovery from the field, and the use of his fair share of the energy in the field was not considered then. The right of each operator to obtain all of the resources from his well regardless of how such action might affect his neighbor was practiced.

Seminole was the first field effectively prorated in Oklahoma. Production was from about 4,100 feet. Wells were capable of producing from 3,000 to 7,000 barrels per day, and their rate of completion provided production in excess of pipe-line capacity. The first proration was in November 1926, and was entirely by agreement among the operators, and production was limited only to the quantity of oil which could be removed by the pipe lines. The proration to pipe-line capacity was only a small amount, and within a few weeks pipe lines were able to handle all the oil and proration was discontinued. In the spring of 1927 additional pools were developed in the field and proration again became necessary. It was set up again, first on a voluntary basis and shortly thereafter an agreement was formally drawn up and presented to the Corporation Commission for approval. This was in August 1927. This agreement was renewed from time to time as it became necessary to include additional pools in the agreement and each of them was approved by the Corporation Commission. In September 1928, the Corporation Commission held its first State-wide hearing. Other fields were being developed in the State which added to the excess oil. Such excess oil would necessarily have to go to storage. The 1915 law specifically provided that the commission had authority to limit production to market demand. As a result of their hearing in September 1928, the commission issued an order which provided for allocation of production within each pool on potential of the wells, and provided for limiting the total production from the State to the market demand for the oil.

This discovery well in the Oklahoma City field was completed in December 1928. This added to the problems of proration which were already considered of some magnitude. There was some question as to the authority of the commission to actually prorate production from wells even though the law provided for it. It had never been done. During this same period Kansas and Texas were also providing some prolific pools which made available for an already oversupplied market a still greater supply of oil.

In April of 1929, at a hearing before the commission, consideration was given to the consumptive demand for the area, including Oklahoma, Kansas, and Texas. The order issued on the basis of the testimony at this hearing recited at some length the waste that would result if the commission should allow production in excess of market demand. The 1915 law while authorizing proration had a number of defects that would not leave the commission on very solid ground on their proration orders.

A new law was passed by the legislature in 1933 which provided a remedy for most of these defects by clarifying the authority of the commission, providing for an organization to administer proration in the fields, and made the definitions of waste more specific. It provided for allocation on the basis of potential similar to that contained in the 1915 law, and provided a minimum allocation of 25 barrels per well. Spacing was not mentioned although this particular problem was acute at that time because of the extension of the Oklahoma City field into an area of small tracts adjacent to the city limits of Oklahoma City. The city of Oklahoma City by ordinance limited drilling to one well to each city block for a restricted area within the city limits. At this same time, the field had a number of oil wells capable of producing a large volume of gas with a high gas-oil ratio. These problems came before the commission numerous times. The law recognized that inefficient or wasteful production from oil reservoirs was not to the best interest of greatest ultimate recovery. Methods of completing wells to insure shutting off the large production of gas, or repairing wells that had been completed with an open gas zone had not yet been devised.

The 1933 law was amended in 1935 to provide for well spacing, drilling units, and allocation of production in proportion to the size of the units. The commission was authorized to require the communitization of small tracts into drilling units. It also clarified the definitions of waste and provided that dissipation of energy that would interfere with greatest ultimate recovery, or waste of gas to unreasonably reduce reservoir pressure, could be prevented by the commission. The proration umpire as provided for in the 1933 law was recognized in his capacity as a conservation officer. Heretofore the conservation officer's duties were restricted to supervision and inspection of setting casing and plugging wells.

The discovery well in the Moore field was completed in 1935, but no additional development was done until 1936. The producing sand was the Simpson formation at about 7,300 feet, and it had an open flow capacity of 150,000,000 cubic feet of wet gas. The well was drilled deeper about a year later and on recompletion had a rated open flow potential of 35,274 barrels per day with a gas-oil ratio of about 1,950 cubic feet per barrel. The first order of the commission was on May 9, 1936, at which time there were three producing wells in the field, all of which were producing with high gas-oil ratios. This order set out well spacing and drilling units and the method of establishing potentials and required that static bottom-hole pressures be taken.

On June 25, 1937, an order of the commission required the taking of bottom-hole pressures on all walls, and changed the allocation formula wherein the established potential of the well was adjusted on the basis of the bottom-hole pressure so determined. On September 11, 1937, another order was issued requiring that in addition to adjusting the potential on the basis of static bottom-hole pressure that the allowable should be adjusted for high gas-oil ratio. The adjustment was based on a fraction using 4,000 as the numerator and the actual gas-oil ratio as the denominator, except in no case should the actual gas-oil ratio for adjustment purposes be considered less than 4,000. Considerable gas has been withdrawn from the reservoir and the bottom-hole pressure was declining rapidly. Very little gas was wasted from the Moore field. It was delivered into pipe lines for fuel and power use. The amount discharged into the air is not known exactly, but was not over 5 percent and probably under 3 percent of the total amount of gas produced. The decreased gas production by placing a limit on the gas-oil ratio and adjustment of allowable production by bottom-hole pressures materially reduced the rate of decline of bottom-hole pressures. The gas-oil ratio produced by some of the later completed wells was reduced considerably below that of earlier completions by setting pipe through the gas zone and taking production from the oil saturated sand in the lower part of the reservoir. It was not always possible to determine the gas-oil contact with precision, and even many of these later wells produced considerable gas with the oil, but the gas-oil ratio was materially below that of the earlier wells which set casing on top of the sand. The practices of setting pipe through the sand, gun perforating, and squeeze cementing to reduce gas-oil ratio were just beginning to be used at that time. It is probably quite safe to say that if the field were to be developed now, that such completion and repair methods would be used to reduce very materially the average gas-oil ratio from what it actually was at the time the field was developed.

The Fitts field was discovered in 1933, but it was not proven a prolific oil field until the latter part of 1934. Intensive development continued through 1935, and by extensions to the field through 1936 and into 1937. The principal production came from several geological horizons, from the Cromwell sand at a depth of about 2,500 feet to the "Wilcox" sand at about 4,500 feet. Some shallower sands produced a small amount of oil and some gas wells but these in the aggregate accounted for only a small part of the production from the field. The first order of the commission was in October 1934 which provided for 10-acre spacing in the Bromide. In January 1935 rules were issued for methods of determining potentials on which the allocation of the well was to be based and at the same time bottom hole pressures were to be determined and the gas-oil ratio measured. Similar orders were issued for the "Wilcox" sand in February 1936 and for the Hunton Lime in December 1936. None of these orders, however, used either bottom hole pressure or gas-oil ratio in the allocation formula. Fitts was the first field in Oklahoma in which, by order of the corporation commission, allocation was based on potentials taken through tubing.

The initial gas-oil ratio from all these formations was with only a few exceptions, under 1,500 cubic feet. The "Wilcox" is the only producing formation which has a water drive. The highest average gas-oil ratio is in the Upper Simpson which is about 8,500, and the average for the field is about 4,000. The average maximum allowed rate of production from the Upper Simpson was about 200 barrels per well per day, 140 barrels per day from the Hunton, about 300 barrels per day in the Wilcox, and 75 barrels per day in the Cromwell. These maximums were reached soon after extensive development started in each of the respective common sources of supply and declined regularly as development progressed.

The Cromwell and "Wilcox" are sand formations and each produces over only a small part of the total area of the field. The Upper Simpson and Hunton were the principal producing formations in the field. The Hunton is a lime formation and the Upper Simpson is principally lime and sandy dolomite. Both of these formations responded well to acid treatment, and some wells were treated with as much as 20,000 gallons of hydrochloric acid to obtain large potentials and increase ultimate recovery. The large potentials obtained as a result of heavy treatments of acid led to forming the opinion by many that the Fitts field was a much greater reserve of oil than could have possibly been substantiated by a more thorough consideration.

The Lucien field in Noble County was discovered in 1932 producing from "Wilcox" sand at about 4,800 feet. The area of the field is about 3,600 acres of which about 400 acres was developed on a 10-acre spacing and about 3,200 acres was 40-acre spacing. Only a few tracts would have produced enough oil to return the cost of development on a 10-acre spacing. About 1,000 acres is under community operation. The South Burbank pool in Osage County is a communitized royalty. About 2,500 acres of the 4,000 productive acres is a unitized operation. Production is from about 2,800 feet and on the unitized block most of the gas has been returned to the reservoir to maintain pressure. The Keokuk field in Seminole County was discovered in 1932, producing from the Misener sand at about 4,100 feet. The area of the field is about 1,100 acres and approximately the north half of the field is community operated. All the gas except that necessary for fuel has been returned to the reservoir in the community operated area. Polo, North Earlsboro, North Bethel, and other smaller pools have been communitized for operating and to gain other conservation advantages of reduced intensive competitive development and operating practices.

Two important oil fields have been discovered in Oklahoma since 1935. The Billings pool in Noble County is producing from the "Wilcox" sand at about 4,300 feet. It covers an area of about 700 acres. A majority of the leases have been communitized for operation and a pressure maintenance program by reinjection of gas is being followed. The Ramsey pool in Payne County is producing from the "Wilcox" sand at about 4,800 feet. It covers an area of approximately 500 acres. These are quite prolific wells and would produce up to 10,000 barrels per day if produced at open capacity. The field is under management except for a few edge leases. It is probably under a water drive and the allowed production per well has thus far been maintained at about 125 barrels per well per day.

A number of small pools including several of those mentioned above have been discovered in Oklahoma in the last 5 years and each has been operated according to the best practices of conservation. A majority of them have 20-acre spacing and indications are now that in the future few of the deeper fields will be drilled to a density of greater than one well to 20 acres, with smaller tracts being combined to form drilling units.

Oklahoma has been one of the leaders in spectacular oil field developments and many of them were carried out under condition that, if the same practices were followed now, would be classed as wastage. Out of these oil field booms came advanced conservation laws in which the State has been just as much a leader as in oil field development. The corporation commission in administering the conservation laws did perhaps at time not make as strict rules governing conservation in some fields as subsequent developments indicated should have been made. In other cases rules were too strict or specific as was later proven in court. At the present time avoidable waste in the State of Oklahoma is at a minimum and it is doubtful that any field is being so operated that a commissioner acting under H. R. 7372 would be justified in issuing regulations or would issue any rules that would reduce avoidable waste.

ARKANSAS

Arkansas has an estimated proven reserve of 300,250,000 barrels [12] and a present average daily production of about 70,000 barrels.[13] This is about 1.6 percent of the proven reserves and 1.9 percent of the average daily production in the United States. Seven fields are producing under conservation rules of the oil and gas commission making about 42,000 barrels or 60 percent of the average daily production of the State.

There has been continuous gas development in the west central part of Arkansas since 1901, but there was no oil development until the El Dorado oil fields was discovered in 1921. The first well in the field was a gas blow out from 2,200 feet with only a show of oil. It continued wild until its pressure was dissipated and it sanded up. The discovery oil well also got out of control and after producing about 15 million cubic feet of gas per day for several days started producing oil which increased to 1,000 barrels or more per day including an appreciable amount of water. Within a few weeks the well had gone completely to water after which it was killed, plugged, and abandoned. The good showing of the first well led to immediate further development, and soon the oil boom was on. Wells were produced full capacity regardless of how much gas or water might be produced. Such was the practice of the industry at that time.

The Smackover field was discovered in the spring of 1922 with a very large and spectacular gas blow-out. A few months later oil was discovered lower on structure and within a few months another oil boom was in full sway. Smackover reached its first peak of production early in 1923. The oil production came from sands at approximately 2,100 feet. The oil was low gravity (19 to 22 American Petroleum Institute), and considerable gas was produced with the oil, especially from those wells structurally high. Gas blow-outs were frequent. Many of these blow-outs charged shallow water sands with gas until over the entire area water wells became artesian, and contributed to the frequent blow-outs and loss of wells.

Early in 1925 some of the wells found production from sands down to 2,600 feet. This started a second boom which reached its peak the latter part of that year. The lower sands also contained a considerable amount of gas, and this combined with high pressure still remaining in some of the upper sands from the earlier development, made drilling more dangerous and disastrous than during the first development. At that time it required about 30 days to complete a well to the Nacatoch sand, and between 5 and 6 weeks to complete a well in the lower sands. With the drilling practices and equipment now in use these same wells could probably be drilled to completion in less than 2 weeks with practically no danger of blow-outs or losing control of the wells at any time. Such has been the improvement in the equipment and technique of drilling.

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[12] Oil Weekly, January 29, 1940.

[13] American Petroleum Institute, average 4 weeks ending February 10, 1940.

Production materially exceeded the capacity of the pipe lines and many thousand barrels of oil were stored in open earthen pits. Nearly all oil contained some emulsion. Because of the low gravity of the oil it was not considered that an appreciable amount of oil was lost by evaporation either by heat treating or in open storage. Viewing Smackover operations from our present state of knowledge of drilling and production practices, the waste was large. However, if viewed from the knowledge of equipment for drilling and production practices that were available to operators at that time, the practices were much less wasteful although competent operators recognized that many wasteful practices were followed.

The legislature enacted a law in 1923 designed to prevent waste, including underground waste, and gave consideration to market demand. This law was under the administration of the railroad commission. In view of our present interpretation of such laws it is possible that more could have been accomplished under the law than was done at Smackover during the second boom development. At that time, however, it was not recognized that restriction of production from a well was a conservation measure, or that wasting energy resulted in wasting oil. The desire of the local public and particularly of the operators and royalty owners concerned, was to obtain as large an income as possible with little thought and less knowledge as to what might be accomplished by restricting production. It is probable that even had the commission tried to enforce conservation rules that might have been made, public sentiment and the courts would have immediately annulled such efforts.

The administration of the law was put under the jurisdiction of a commissioner of conservation in 1925 with a few changes. The statute was again brought up to date in 1927 to require the practice of conservation as had been developed by the industry, and the law was put under the administration of a board of conservation which consisted of five members serving without compensation. Another conservation law was enacted in 1933 which was quite similar to that of 1927, but was administered by a board of five members who were required to be experienced in the production of oil and gas.

From the completion of the second development of Smackover until 1937 no fields were discovered which were not under sufficient control by competent operators to be developed under good drilling and production practices. In 1937 the Rodessa field producing from 6,100 feet was extended from Louisiana into Miller County, Ark. This field had a very large gas cap and in order to obtain the best recovery it was essential to maintain gas production at a minimum. The Board of Conservation gave the problems of the field serious consideration and with the benefit of conservation rules in effect in the States of Texas and Louisiana in the same field, they issued rules for the Arkansas part of the field similar to those in effect in Louisiana. These rules provided an allocation formula whereby production was allocated 50 percent on acreage and 50 percent on bottom hole pressures, adjusted to a gas limit of 2,000 cubic feet per barrel. This rule had the effect of placing a penalty on excessive drilling and on wastage of gas both because of the effects wastage would have on bottom hole pressure and the reduction of allowable because of the gas limit. There was opposition to control by those whose position would be hurt by restricting gas waste and by many more who thought they might be hurt. The result was that the effective date of the order was held in abeyance for 5 months, which could not be done under the present statute. When it did become effective, it was enjoined in court. During all this time gas wastage was as in the days of old and the reservoir pressure continued its precipitous decline. The order became effective in March 1938 after the injunction was voluntarily withdrawn. The contrast of conditions between the parts of the field in Texas and Louisiana where conservation had been practiced and that part in Arkansas which had not considered conservation, was striking. It had its effect. As additional fields were discovered and developed there was no objection to strict conservation rules. It was still fresh in the mind of the legislature when it met in 1939 and passed the most strict and effective conservation law of any State.

The Shuler field was discovered early in 1937 in the Nacatoch sand at about 5,600 feet. It had little promise of becoming important, however, until the prolific Jones sand at 7,500 feet was discovered some 6 months later and the Reynolds (Smackover) lime at 7,600 feet before the end of the year. The Jones sand had a definite gas cap and was a prolific oil producer. For the first few months it was produced without regulation. In January 1938 by agreement among the operators and in cooperation with the Board of Conservation the field was prorated and allocation was based on 50-percent acreage plus 50-percent bottom hole pressure. A 20-acre spacing program was agreed to. Proration of production from the Reynolds lime on the same basis as for the Jones sand was also agreed to but the spacing was 40 acres. The basis of allocation for both pools was changed after the 1939 conservation statute became effective.

The 1939 conservation law became effective in February. The administration of the law is under an Oil and Gas Commission of seven, four of whom must be experienced in the development, production, and transportation of oil and gas. Appointment of a director is authorized, together with engineers and other employees. The definitions of waste are broad and some are particularly significant.

There are now 7 pools producing approximately 60 percent of the 70,000 barrels [14] daily in the State that are operating under special rules of the Oil and Gas Commission. The production is from about 300 wells on 8,800 developed acres. The remaining 40 percent of the daily production or 28,000 barrels of older settled production is from 2,700 wells in 10 fields, and regardless of how wasteful they may have been operated in the past are now being operated with no avoidable waste. Six of the seven prorated pools are producing from limestone reservoirs, with a spacing of 40 acres per well. The Jones sand pool of the Shuler field is on 20-acre spacing. The allocation basis in all pools is acreage times pressure which assures a reasonably uniform withdrawal throughout the reservoir. Uniform withdrawals are further maintained by adjusting the allocation to individual wells for high gas-oil ratio. Thus far in only two pools (Shuler-Jones and Village) [15] is a gas-oil ratio adjustment applied. In the others the operators have been able to either complete or repair the wells so they can be produced with a gas-oil ratio of not more than 2,000 cubic feet of gas per barrel of oil.

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[14] American Petroleum Institute, average 4 weeks ending February 10, 1940.

[15] February 1940.

The Arkansas oil and gas conservation law with its administration is obtaining a minimum of avoidable waste in all forms in the development and operation of oil pools to a degree that has not yet been accomplished by any other State. In addition to being the most comprehensive law, it is the most recently enacted statute of any State.

SUMMARY

Some waste exists in every industry that produces or processes raw materials, and it is not unique that there is some waste in the production of oil and gas in the area under discussion. Whether such waste is avoidable or not and to what extent is a matter of opinion of the individual making the study, but it is safe to predict that the most ardent proponent of conservation would have difficulty showing an appreciable amount of waste as defined in H. R. 7372. Where there is avoidable waste it is small and in most cases becomes a matter of interpretation as to whether the particular waste is to be regarded as avoidable waste or not.

A divergence of viewpoints on this matter would not arise from a basic interpretation of waste but rather from differences of opinion as to the amount of waste that can occur before it can be termed avoidable waste. The natural conditions and development practices in various fields are so different that concrete rules of widespread application cannot be made. Only principles can be followed, and there is no difference of opinion on principles.

H. R. 7372 proposes only principles to be followed to reduce avoidable waste. Rules necessary to effect conservation must be made by the commissioner, and intelligently applied to individual cases which can be done sanely only after securing an intimate knowledge of all conditions existing in a given pool. Such unbiased information can be gained practically only by public hearings. If hearings are held adjacent to the area under consideration a large force of deputy supervisors will be required and the Secretary of the Interior has stated he does not intend to increase materially the present number of employees. If such hearings are held in Washington, it is too distant to obtain fair representation in many cases. Wherever such hearings may be held they would be duplication of effort by repeating the same material presented to State conservation authorities.

H. R. 7372 in setting up principles of conservation makes no reference to property rights. A well is either committing avoidable waste or not as the commissioner interprets and applies the principle to the individual well, lease, or pool. There is no reference or qualification which would require the commissioner to consider whether such ruling would or would not affect each owner's right to recover his fair share of the oil and gas in the common source of supply, and the use of his fair share of the energy.

Superficial consideration of waste by inspection of an oil field can be quite misleading. Burning surplus gas is not proof of avoidable waste. The gas has completed its work of bringing the oil out of the reservoir and raising it to the surface. Often there is not sufficient supply available to justify the high cost of installation of compressors and pipe lines to deliver it to an available market. Returning the gas to the reservoir may not be feasible. If any economic use of the gas can be made, the operator is first to give it consideration. The economic loss, if any, is his.

Control of a gas cap by properly completing wells is as easily and cheaply done as to complete so as to produce gas from the gas cap. To repair a well that was not properly completed or one in which the gas cap has expanded to give a high gas-oil ratio is much more expensive and frequently cannot be justified even though to do so may increase ultimate recovery. Such repair work must have a reasonable assurance of saving sufficient gas to increase ultimate recovery enough to return the cost of repair work. Before any repair work is done there must be reasonable assurance of success. A high gas-oil ratio is not necessarily in itself evidence of avoidable waste. When most of the gas is from a gas zone, whether that gas zone was part of the original gas cap or the result of an expanding gas cap, there is reasonable probability that it can be repaired. The operator is then faced with the problem of whether the anticipated increased recovery will justify the work. In many cases a high gas-oil ratio is not a result of free gas from a gas cap, but only gas closely associated with the oil in the reservoir. In those cases the gas-oil ratio cannot be reduced. Maintenance of reservoir pressure may be a criterion of efficient rate of production from a field. In general, the lower the rate of reservoir pressure decline the less probable ultimate waste of oil, gas, and energy. Many fields may have a relatively rapid rate of pressure decline and still be operated at maximum practical efficiency. Fields having a water drive should be produced at a rate that the water will maintain pressure, providing it is within economical range. If a gas cap is present wells must be kept in such repair that a minimum of free gas from the gas cap is produced. When there is neither gas cap nor water drive, each barrel of oil from the reservoir is a barrel of liquid and the effect on pressure is much greater than the same volume of gas or if it is, in effect, replaced by a barrel of water. Therefore, the reservoir conditions must be known before judgment can be passed as to what is the proper rate of reservoir pressure decline.

Fields which were developed more than 10 years ago could probably have obtained greater recovery had they been operated conservatively. Most of them are now approaching or have declined to a rate of production that is classed as stripper wells and such waste as may be occurring could not be reduced economically, and therefore would not be considered as waste under H. R. 7372. In Montana, Colorado, and Wyoming, the operators in each field follow such conservation practices as are warranted, and these States have been remarkably free of wasteful operations. Kansas, Oklahoma, and Arkansas have adequate conservation laws. Pools in these States which would have waste if not restricted are prorated according to conservation rules issued by the respective conservation authorities. General rules are issued which apply to all fields in the State until investigation by the commission results in the conclusion that specific rules are necessary to prevent avoidable waste. Special rules issued are subject to change at any time on the initiative of the commission or an application of any interested party. By such supervision any conservation rule may be changed or additional rules made as a result of the investigation of the commission. Inasmuch as the commissions have all production under their supervision in their respective States, and all prorated pools are under special rules, it would seem prima facie evidence that no avoidable waste exists in those States having conservation authorities.

One person may have the opinion that a commission is not providing as strict rules or maybe not even the right rules to obtain the maximum production and recovery efficiency in a certain pool. Another person may have a similar opinion on another pool. But that does not make the commission's orders wrong. A commissioner acting under H. R. 7372 would undoubtedly differ with every conservation authority on certain conservation rules for every pool that special rules have been issued. In many cases, probably most cases, his opinion would not differ sufficiently that he would issue different rules than those in effect. In any event it is not reasonable to expect judgment of a Federal commissioner to be superior, except in authority, to the judgment of a 3-man commission, as Oklahoma and Kansas have or a 7-man commission as Arkansas has. The commissioner would have the same information upon which to base his rules as is available to the State commissions—that made available by the operating companies, through operating reports and technical data obtained and released by the technologists with the companies. A difference in rulings would result from difference in quantitative interpretation of the data. Authority would determine right.

It is unreasonable to anticipate that any conservation authority acting under any conservation law can reach perfection in preventing avoidable waste. It may be of interest to consider what the effect may be of an only nearly perfect conservation administration. The reserve within the area under consideration (Montana, Colorado, Wyoming, Kansas, Oklahoma, and Arkansas) is 2,437,000,000 barrels.[16] If the total avoidable waste is 1 percent, then it is 24,370,000 barrels or equivalent to about 7 days' supply at the current rate of consumption in the United States. However, of the total reserve, about 770,000,000 barrels are from stripper wells in which no avoidable waste is occurring and therefore do not come under specific conservation rules of conservation authorities, nor would they be considered under H. R. 7372. The avoidable waste at 1 percent then would be 16,600,000 barrels which is less than 5 days' supply at the current rate of consumption in the United States, and would be recovered over many years. Such a figure sounds large when expressed in barrels, but is in reality an almost insignificant part of the industry. Even if it be this high, is it a quantity which justifies the duplication of effort on the part of the industry, and on the part of government as would be required by H. R. 7372? And there is no assurance that a Federal commissioner could make and administer conservation rules which would recover that additional 1 percent.

Conservation practices by the petroleum industry in the exploration, development, and production of oil fields, and the encouragement of conservation laws and their adequate administration is an economic necessity. Proration to reduce storage and surface waste is not yet 14 years old. That was the first break from the strictly individualistic law of capture that demanded "Everybody for himself and the devil take the hindmost." Proration as a means of increasing ultimate recovery of a petroleum reservoir is not yet 10 years old, and it is only half that long since the petroleum industry obtained first recognition by conservation authorities of correlative rights of different owners as a conservation act.

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[16] Oil Weekly, Jan. 29, 1940.

The petroleum industry has not merely submitted to conservation legislation and rules and regulations of constituted conservation authorities. It has actively supported them. Its technologists have studied reservoirs and reactions in reservoirs to withdrawal of fluids to provide a guide to producing practices. It has developed special practices of completing and repairing wells, such as gun perforating, squeeze cementing and chemical plugging to obtain and maintain better control of production from the reservoir. It has given its technologists time and its field operation experience to conservation authorities to encourage and support them in making more strict and progressive conservation rules and regulations. It has similarly contributed to defend legal attacks on conservation rules and regulations.

Mistakes have been made in information submitted to conservation authorities. Mistakes have been made by conservation authorities by issuing rules more strict than data, experience, or law would support, or delaying a conservation rule too long in order to obtain more data or experience to justify the order. More such mistakes will be made. The nearer the conservation authority is to the industry, the more frequently it can have contact with the problems of the industry, and the more intelligently it can administer its conservation requirements and encourage the continued rapid progress in conservation practices by the industry.

Mr. COLE. May I ask you about Kansas? You stated that 175,000 barrels are being produced daily?

Mr. MILLIKAN. That is approximately correct, according to recent reports.

Mr. COLE. What have you to say as to the ability of the Kansas fields to produce in excess of that quantity without committing waste?

Mr. MILLIKAN. I think they could do so, so far as physical waste in the reservoirs is concerned.

Mr. COLE. You feel that way?

Mr. MILLIKAN. Yes, sir.

Mr. COLE. Would you be willing to estimate as to about how much more oil Kansas could produce in excess of their production without creating waste; that is, could they produce say 100,000 barrels a day more?

Mr. MILLIKAN. Possibly so. Avoidable waste is largely a matter of individual interpretation. There are some perhaps who feel that maybe an additional 50,000 would create avoidable waste. Maybe 50,000 barrels would create avoidable waste in one field, whereas in another it might be increased 100,000 for the State without creating avoidable waste.

Mr. COLE. That is, covering the State of Kansas as you have in this paper, it is your opinion that without violating the present Kansas law as to waste, the wells of that State can produce as high as 275,000 barrels a day?

Mr. MILLIKAN. I think that is quite possible, except for this point. You say waste as defined by the law.

Mr. COLE. Yes.

Mr. Millikan. The Kansas law also prohibits economic waste and I think if production were increased materially above the present allowable, that it would become waste under the law of the State of Kansas.

Mr. Cole. That is, 175,000 barrels is about the limit that Kansas law will permit?

Mr. Millikan. Yes, sir; on account of the economic waste phase; not the physical waste.

Mr. Cole. If there was demand for 50,000 or 100,000 barrels of oil or more, in Kansas today than they are now producing, could not the fields in Kansas produce it under the existing law?

Mr. Millikan. If there is that demand, I think possibly it could reach that quantity.

Mr. Cole. Yes. If there is a demand; if there is a demand today for 100,000 barrels of Kansas oil in addition to the 175,000 now produced, your opinion is that that 100,000 could be produced in the Kansas fields without violation of the Kansas statute?

Mr. Millikan. I believe so. That is my opinion. Undoubtedly there are many who would differ with me.

Mr. Cole. I see.

Mr. Millikan. But, as a practical matter, I might call attention to the transportation facilities. They would not permit that amount of production.

Mr. Cole. Then why is it that Kansas does not produce the additional 100,000 barrels of oil? You say that the fields are able to produce an additional 100,000 barrels. Is there a demand for it? Why is it that they do not produce it? Is it because there is no demand?

Mr. Millikan. That is my understanding.

Mr. Cole. Why is there not a demand for that additional production of Kansas oil?

Mr. Millikan. Mr. Chairman, I hardly feel qualified to answer that. There are other witnesses who will appear later who are familiar with the market demand situation and I am sure that they will be glad to answer it. If not, I shall be glad to find an answer for you. I cannot answer it at this time.

Mr. Cole. I would be willing to gamble on the correctness of your answer. You know the situation out there in Kansas and all of the circumstances.

What reason do you assign for the fact that Kansas has not a greater demand for oil, than can be produced under the Kansas statute without violating the waste provisions of the statute?

Mr. Millikan. Well, I could do no more than venture an opinon on that.

Mr. Cole. All right.

Mr. Millikan. I think, probably there is other oil which is more available to the market.

Mr. Cole. Other oil more available to the market?

Mr. Millikan. The transportation system at the present time, for western Kansas oils, is fully taxed. As a matter of fact, I believe there is at this time in certain fields in western Kansas pipe-line proration, so that even though there were a market demand, which there may be, they still would not be able to get that oil to market.

Mr. Cole. I assume, Mr. Millikan, when you spoke of the condition of the markets, you meant, of course, markets outside of the

State of Kansas, and the State of Kansas itself would not have any need for additional oil produced in Kansas.

Mr. MILLIKAN. Yes. Except occasionally in local refineries, which is rather small as compared to the picture of the State as a whole.

Mr. COLE. And if there were other markets outside of the State where there were other demands presented, up to 100,000, would you be willing to go over that figure and if so what would be a fair amount?

Mr. MILLIKAN. I think that is plenty. But, if that demand should occur, they would still not be able to get it to market, which would still require this proration.

Mr. COLE. Well now, suppose it is conceded that Illinois is producing oil wastefully, in violation of the formula laid down by the Kansas law; if that were so, there would be markets available for additional oil in Kansas, would there not?

Mr. MILLIKAN. That seems very logical; yes, sir.

Mr. COLE. All right, that is all.

Mr. MILLIKAN. I would like permission, if I may, to dwell for just a moment on this supplemental statement which was filed by the Department of the Interior.

Mr. COLE. Very well.

Mr. MILLIKAN. This statement is somewhat puzzling to me. It is puzzling because of the contentions that have been presented to your committee by the Secretary of the Interior. I do not know that the exact phraseology has been used, but one has been led to believe that he feels that there is gross, flagrant waste in the production of oil.

This supplemental statement I presume is the one which he promised in his testimony. One would presume, therefore, that the examples which are contained here are the examples of waste he considered as the gross and flagrant waste.

In studying the specific instances cited which are within the area that I have been discussing, I have not found anything that I believe could be considered either as gross or flagrant or negligent waste at this time. I would like to discuss two instances cited, not because of the importance of those particular instances, but rather because of the principle which is involved.

I would like to read a sentence from the report from Medicine Bow, Wyo., the same field which Mr. Greever commented on a few moments ago.

Mr. COLE. What are you reading from now?

Mr. MILLIKAN. I am reading from the supplemental statement filed February 8, 1940, by the United States Department of the Interior in connection with H. R. 7372, containing specific allegations of physical waste.

Mr. COLE. And how did you get that report?

Mr. MILLIKAN. These reports were furnished to us.

Mr. COLE. That is the supplemental report by the Geological Survey, Bureau of Mines, and was made available to you gentlemen?

Mr. MILLIKAN. Yes, sir.

Mr. COLE. This is contained as a part of exhibit No. A. prepared by the Geological Survey. Do you have an extra one of those?

Mr. MILLIKAN. No, I haven't, but I think they can be made available for you.

Mr. COLE. All right.

Mr. MILLIKAN. I just wish to read about three lines is all, and this is on the Medicine Bow field.

> Loss of energy in this field has occurred. Original estimates of reserves were from 7,000,000 to 20,000,000 barrels, while reasonable estimates at this time place the reserves at 3,000,000 barrels, of which estimate one and one-half million barrels will be recovered under present production practices.

There is nothing wrong with the facts in that statement. The inference, however, is entirely wrong. The inference is that while the reserves in that field may have been as much as 20,000,000 that due to waste of gas from that field, the reserves have been reduced to about 3,000,000 barrels.

Gentlemen, that is not the case. Probably when the Department of the Interior presented this statement it was not intended to be misleading. I hope not. However, what did happen, and what happens quite frequently, is that we are required to make estimates of reserves in fields very early in their development. It is not unique that we might occasionally considerably overestimate or we might underestimate reserves. That is what happened here. The early estimates of reserves in the field were not substantiated by subsequent development. Also the field has already produced over 3,000,000 barrels which makes the original reserves, using their estimate of present reserves, over 6,000,000 barrels. The difference between the original estimates of 7,000,000 to 20,000,000 barrels and the present estimate of 3,000,000 includes over 3,000,000 barrels of oil already produced, and an overestimate of reserves in the early life of the field, and was not due to waste of gas from the field.

There is one other reference that I would like to make. In exhibit B, by the Bureau of Mines——

Mr. COLE. Exhibit B of the Bureau of Mines?

Mr. MILLIKAN. Yes. I am reading under the title of "Bird Creek Field, Tulsa County, Okla."

> A lease in the Bird Creek field has five wells and produces 11 barrels per day from the Burgess sand at a depth of 1,200 to 1,300 feet. The gravity of the oil is 37° A. P. I. and although it is stored in open tanks, there is a slight increase in American Petroleum Institute gravity on standing because of more complete resolution of the emulsion in the oil. Figure 17 shows the tank battery on this lease. The tanks are in poor condition as evidenced by the oil waste that has soaked the ground on the down-slope sides of the battery. The ground was saturated with oily waste to a depth of 5 inches at a distance of 200 feet from the tanks. Tank batteries of this type are not unusual on many of the older producing properties in eastern Oklahoma. Undoubtedly vapor-tight tanks painted light colors would effect material savings. The use of lease tanks having a capacity proportionate to the production of the property would reduce evaporation and other losses.

Gentlemen, I wonder if it is the intent that that shall be considered as an example of the flagrant waste in the industry? I think you gentlemen are too familiar with our field operations to give such absurd charges serious consideration. There are a number of similar instances contained in these allegations.

I thank you very much for your attention.

Mr. COLE. Thank you, Mr. Millikan. You have presented a very interesting statement.

Mr. MILLIKAN. I would like to have permission to file a detailed statement in reply to the supplemental statement of the Secretary of the Interior.

Mr. Cole. You wish to file a detailed statement in reply to the supplemental statement of the Secretary of the Interior?

Mr. Millikan. Yes.

Mr. Cole. That permission is granted to you.

Mr. Millikan. Thank you, very much.

Mr. Cole. We will take a recess until 2:15 p. m.

(The statement referred to is as follows:)

Supplement to Statement of C. V. Millikan of Tulsa, Okla., Amerada Petroleum Corporation

This supplemental statement is limited to a discussion of the report submitted to your Committee on February 8, 1940, by the Department of the Interior, entitled "Specific Allegations of Waste." It is further limited to the area covered in my previous statement, which is Montana, Colorado, Wyoming, Kansas, Oklahoma and Arkansas.

It is assumed that this supplemental statement by the Department of the Interior is that which was promised by Secretary Ickes in his statement before your committee on November 10 last. He there stated: "I have asked * * * the directors of the Geological Survey and the Bureau of Mines to supplement this statement with *full reports* on present and recent instances of avoidable waste in the oil and gas industry." The introduction to exhibit A by the Geological Survey states that the instances cited are only representative examples of waste. This qualification does not appear in exhibit B by the Bureau of Mines. Inasmuch as the examples are given as argument in support of H. R. 7372 it seems logical to assume that the examples cited are instances of most serious waste. This seems even more likely when it is recalled that the Secretary in his statement said (p. 527) "* * * it has been implied that, in the administration of this measure, there would be a Federal agent in each oil field of the United States and that Federal engineers would be scurrying around the countryside looking for opportunities to point a finger of guilt at minor and unimportant instances of waste. If the bill is enacted and I have any connection with its administration, I assure that there will be no such running around to disturb and annoy and that action to prevent waste will be taken only in those instances where the facts are beyond engineering dispute * * * ". I maintain and will show that not a single instance of waste cited is avoidable beyond engineering dispute. In view of the above statement of the Secretary of the Interior, it may be concluded that the instances of waste cited are of sufficient magnitude in the opinion of the Department of the Interior to justify enactment of a bill that would give the Federal Government superior authority over all conservation administration by States, particularly when such waste occurs as is described in each instance in the supplemental statement.

The first specific allegation of waste in exhibit A is quite indefinite, except that it is in the Cutbank field, Montana. It is measured by the fact that the gas can be heard blowing, some distance from the well—no information as to number of wells or gas-oil ratio. Another example is more specific in that 12 wells making 12 barrels each have a gas-oil ratio of 4,166 cubic feet of gas per barrel of oil. These two examples of alleged waste are no doubt outstanding, otherwise a more general charge of waste would have been made. The Cutbank field has a proven oil area of almost 40,000 acres and a proven gas area of over 50,000 acres. In view of the size of the field it appears to be in very good shape as far as waste is concerned if these two leases be outstanding examples. That the field is in good shape is indicated by the fact that the average gas-oil ratio is only about 400 cubic feet per barrel of oil. The wells on the Indian land may have been repaired at the request of engineers of the Geological Survey, but other wells in the field that could be repaired have been repaired. Much of the gas produced with the oil in the field is used for fuel and market.

Both the Geological Survey and the Bureau of Mines mention waste in the Medicine Bow field. The original gas in solution according to the Bureau of Mines was about 3,000 cubic feet per barrel while now several wells have a ratio of 13,000 cubic feet per barrel. This is only three times the original gas-oil ratio and, while it is high compared to the low ratio of many fields, it is not high considering the original natural conditions in the field, including a 60° A. P. I. gravity crude. The Geological Survey mentions that the original estimates of reserves ranged from 7 to as high as 20 million barrels, and a reasonable estimate now is 3,000,000 barrels. This is a very misleading statement, although perhaps it was not intentionally so. The inference from the statement is that due to wasteful production practices, the ultimate recovery was reduced from 7 to 20 million barrels to 3 million barrels. That is not the case. Preliminary data from early development did indicate a higher recovery than subsequent development proved. The present indicated ultimate recovery is much below some of the original estimates because of errors in the original estimates and not because of wasteful production practices as inferred. The field has produced over 3,000,000 barrels and they estimate present reserves at 3,000,000, making an original reserve of 6,000,000 barrels. It will be noted that no gas is wasted into the air. The gas which would otherwise be vented to the air is used to repressure an older field several miles away. The Second Sundance sand is apparently being operated without any waste. A specific instance of waste is cited of a certain well in the field in which migration occurred from the Second Sundance to the First Sundance. This well, I understand, was completed in a manner approved by the Geological Survey, and while waste may have occurred, it is not an instance that would be prevented by any legislation.

The specific information on Oregon Basin is substantially correct. The gas volume may be correct, because the wells are produced higher at some times than others. The gas-oil ratio is low, and the average rate of production is low enough to obtain the best advantage of the natural water drive. The lease referred to which was produced near capacity was developed in 0928.

The conditions in the Frannie field are given, which I would interpret as being operated without waste, and no claim of waste is inferred in the statement.

According to the data submitted on the Garland field the average gas-oil ratio is not more than 2,000 cubic feet per barrel. It is stated that the acreage not unitized has been producing approximately 3,000 barrels per day. This could not have continued long because the highest daily average production for the entire field for any month in 1939 was about 2,800 barrels in August and the average for the year was about 2,400 barrels daily.

The gas if saved might profitably be returned to the oil sands in the Osage field according to the statement. Note that even this is questioned and it is stated in effect that the amount of gas produced cannot be reduced.

The Lance Creek field Basal Sundance sand was produced with a high gas-oil ratio in the early life. This sand was found to be productive in 1930. Most of the field was subsequently unitized and, quoting the statement, "Physical waste of crude oil in the field is believed to be at a minimum." The Leo sand production in Lance Creek covers a much greater area than the Basal Sundance. Plans for unitization are now being formulated. Claim is made that some of the gas-oil ratios are high, but inasmuch as no figures are given one might conclude that actual figures would be comparable to those in other fields where excess gas production is alleged. Complete unitization would perhaps improve conditions, but in any event there appears to be no claim of excessive and flagrant waste in the field.

Four blowouts or wild wells are cited as examples of waste. There is no evidence that any legislation, either State of Federal could have prevented these wells from getting out of control.

KANSAS

In appendix B it is stated that several fields in Kansas are producing in excess of the allocation by the Kansas Corporation Commission, under court restraining orders. The statement contains a recitation of the reasons for the higher rate of production, and a tabulation of data on the fields. Except for the fact it is included in the exhibit which is entitled "Recent and Present Instances of Avoidable Waste" there is no specific allegation of waste in any of the fields. As a matter of fact there is some question whether or not there is reasonably avoidable waste at the higher rate of production, which is still a low percentage of the potential as is shown in the tabulation. Certainly it cannot be classed as excessive and flagrant waste. Gas wastage has in the past occurred with oil production in the Otis field. This is discussed in my statement. It is recited in the statement of the Department of the Interior that the oil is now being produced only from low gas-oil ratio wells.

Gas wastage occurred in the Burrton field which, according to the allegation, was discovered and developed before gas conservation laws were passed in Kansas. While this is not literally true, it is true that the fact that the gas conservation law and oil conservation law were different made it impossible to write necessary conservation rules. Under the 1939 statute such a field can be regulated. This field has been discussed more fully in my statement. The allegation states "the field is now nearly exhausted and although some gas is still being vented to the air the quantity is much less that it was." Note that there is no claim of waste and the inference is quite clear that there is no avoidable waste in the field at this time.

The paragraph regarding the possible harming of a well by use of acid is substantially correct. However, whether or not an excessive quantity is used or adequate control is maintained, cannot be determined until after the acidizing job is completed and the damage is done. I would not consider that either the quantity of acid or what control to use can be as definite as inferred in the allegation. The allegation admits the advantages of the use of acid in lime reservoirs. I think the judgment of the industry is evident when it is considered that some 2,400 wells in Kansas have been acidized in the last 2 years.

The allegation on waste as a result of physical potential tests applies to conditions a year ago. As related in my statement physical tests and large wells are almost obsolete in the State now.

The allegations regarding improperly plugged wells undoubtedly refers to wells abandoned more than 20 years ago, and sounds reasonable. I doubt if any complaint can be made of improper plugging of abandoned oil and gas wells in the last 5 years.

OKLAHOMA

Appendix A: The allegation of waste in the Jesse field refers to a specific well, whose location is not given. Some 40 wells are producing in the field and only one is alleged to have produced with avoidable waste. The casing program given is that approved by the corporation commission for the field, and the open hole referred to as excessive is a producing zone considered as a common source of supply by the corporation commission.

A specific lease is referred to in Allen which is not named or located. The citation infers that the wells causing the waste have been repaired.

The Fitts field is described at some length and the data submitted are substantially correct. The only allegation of waste in the field is the venting of gas into the air and failure to extract gasoline from part of that gas. As stated in my paper venting gas which has completed its work of oil recovery from the reservoir and has not been produced excessively in so doing, and cannot be used or marketed is not avoidable waste. The average gasoline content of gas treated for gasoline is 1.2 gallons per thousand cubic feet, but most of that gas which is vented without treating has too low a gasoline content to justify the cost of treating, and the remainder is located too far to justify the cost of lines to transport the gas to the gasoline plant. Therefore, the waste of gasoline referred to cannot be considered as avoidable waste. It should be added that about 23,000,000 cubic feet of gas per day is being marketed from the field.

The figure submitted on gas at the gasoline plant in the Fox-Graham field has changed some, due to a larger available market developed late in 1939. Recent figures show a total volume of about 9,000,000 cubic feet daily which was disposed of: venting 2,000,000 cubic feet; return for lease use 5,000,000 cubic feet; market 2,000,000 cubic feet. The source of this gas is from wells which have been producing over 20 years, and have long been stripper wells. It cannot be considered avoidable waste, which statement would still apply if the figures submitted were correct.

Appendix B: Oklahoma City is cited as a recent instance of waste. There was considerable gas vented to the air during the development of the field 10 years ago. The present law gives the corporation commission power to control production of gas and spacing, which power they did not have when the Oklahoma City field was developed. Also development of new methods of completing and repairing wells to conserve gas has occurred which makes conservation of gas possible to an extent that could not have been accomplished then. There is no claim of avoidable waste at this time.

The Moore field was discovered in 1935. It is possible the field was produced too fast but the volume of gas vented to the air was quite small. This field is discussed in my statement. Here is another example where an error in early estimates is used to infer large waste of unrecoverable oil. True, the original estimates did range from 20 to 50 million barrels. Subsequent developments gave information which would not substantiate such high figures. Even granting that some oil may have been lost by an excessive rate of production it was not of such magnitude as inferred in the allegation. Regardless of how much waste may be claimed to have occurred 5 years ago, there is no claim of avoidable waste at this time. A sentence from my original statement is repeated: "It is probably quite safe to say that if the field were to be developed now that such completion and repair methods would be used to reduce very materially the average gas-oil ratio from what it actually was at the time the field was developed."

A number of new wells in various parts of the State have been cited which are alleged to have been permitted to produce without proration, but specific locations of these wells are not given. I only make the observation that it is reasonable to suppose that these wells did come to the attention of the conservation authorities and if in their judgment any one of them was committing waste by the manner in which it was producing it would have been properly regulated.

Several stripper leases are referred to but the specific location of none is given. One of these is in the Bird Creek field, Tulsa County, which may be over 20 years old. The lease produces 11 barrels per day including some water from 5 wells. Out of his income from these 11 barrels the operator pays one-eighth to the royalty owner, gross production taxes, advalorem taxes, Social Security and old-age-pension taxes, but probably no income tax. Then he pays for repair parts plus a sales tax, the pumper, the roustabouts, and maybe a tax accountant. With what is left presumably he should dress up his tanks and paint them a light color or buy new ones which will pay out in 7 or 8 years if his rate of production doesn't decline, which it will. Inasmuch as this allegation is cited as support for H. R. 7372, it may be presumed that such leases would come under H. R. 7372 and must have Federal control. The answer I think is obvious, and similarly applies to the other allegations made on specific stripper leases.

ARKANSAS

Shuler.—This allegation of waste is only that gas is being vented. The average gas-oil ratio of 700 to 900 cubic feet per barrel, is an absolute minimum. The gas being vented has completed its work of moving the oil out of the reservoir and raising it to the surface. Some is used, some marketed, and the remainder vented. That cannot be considered avoidable waste. Construction of a gasoline plant has been considered by several but thus far apparently no one has concluded that such a plant would be commercial at this time.

In the village pool the gas-oil ratio is high compared to other fields. It is at a practical minimum considering the natural reservoir conditions existing. Allocation of production is being adjusted on high gas-oil ratio wells as explained in detail by Mr. O. C. Bailey, chairman of the oil and gas commission, in his testimony before this committee and I believe it is unfair to say and not a fact that the present gas-oil ratio is causing rapid depletion of reservoir energy.

Magnolia.—This field is in good shape as indicated in the statement and no comment is offered.

In the old fields, El Dorado, Urbana, and Smackover the allegation is made that some oil emulsion is discarded. It would seem obvious that only emulsion which cannot be treated would be burned or discarded, and if this is true it cannot be considered avoidable waste.

That part of Rodessa which is in Arkansas has been discussed in my main statement. There is no allegation of waste in the Arkansas part of the field.

The facts which are submitted in the exhibits are on the whole substantially correct, except where the conditions have changed since the statements were written. Unfortunately some of the inferences in the statements are incorrect, but I am willing to accept the explanation that the wrong inference was unintentional. Some of these have been referred to herein.

CONCLUSIONS

Thus far this statement has discussed specific allegations of waste which were contained in the supplemental statement of the Department of the Interior. There are some general observations which should be made.

Gas dissolved in the oil is produced with the oil and oil cannot be produced without it. When there is a market it is sold, as it stands to reason that any operator would rather sell his gas than burn it in flares. If the gas cannot be sold the operator must decide between (a) returning it to the reservoir, (b) burning it in flares, (c) shutting down the wells. In a constantly increasing number of cases, gas is being returned to the reservoirs, but there are a great many cases in which this is not economically possible because of the cost involved, both in initial investment and subsequent operating cost. In some cases the reinjection of gas would actually do harm to the future production of oil, and in such cases this method of disposing of the gas would mean sacrificing the substance for the shadow. Apart from innumerable legal and other complications involved in shutting down all oil wells where the gas could not be disposed of in a manner other than burning, it would reduce the production of oil far below the current needs of the country with consequent increase in price of oil products to the conumer.

The foregoing is an elaboration of the contention made in my main statement to this committee to the effect that superficial consideration of waste by inspection of an oil field can be quite misleading and that burning of surplus gas is not proof of avoidable waste.

Recently there have come from the Department of the Interior many references to waste always in superlative terms. It is only logical to assume that the allegations contained in its supplemental statement are the basis of those references as well as the basis of its support of H. R. 7372. That the supplemental statement of alleged waste supports a conclusion of excessive waste, I deny. I repeat with even greater conviction the conclusion of my main statement that the evidence is conclusive that in the area under consideration the avoidable waste is a minimum.

If as an alternative it is suggested that the wells be completely closed in order to prevent the escape of the gas, it would inevitably follow that the available oil produced would fall far below consumptive demand and bring about increase in the price of gasoline and other petroleum products to the consumer.

(Thereupon, at 12:50 p. m., a recess was taken until 2:15 p. m., of the same day.)

AFTER RECESS

Mr. Cole. The committee will please be in order. We will hear you, Mr. Allen.

STATEMENT OF ROBERT E. ALLEN, REPRESENTING THE CALIFORNIA OIL AND GAS ASSOCIATION, LOS ANGELES, CALIF.

Mr. Allen. My name is Robert E. Allen, and I represent the California Oil and Gas Association.

I would much rather have your committee back in California where I could show you more of our oil industry than to be here on such a fine day trying to tell you about it. However, the first-hand information regarding conditions in the California petroleum industry that your committee obtained when you honored California with a visit last month will now enable me to practice a little conservation of my own of time by offering my complete statement and supplement for the record and for your leisurely perusal, and presenting at this time only the following summary of that statement.

The California Oil and Gas Association, of which I have long been a member, comprises a complete cross-section of the California petroleum industry. Its membership controls more than two-thirds of the oil industry of California. The association is not identified with the voluntary program for the regulation of crude oil production nor is it affiliated with the Central Committee of California Oil Producers which directs that program.

The position of California in the petroleum industry of the United States is well known. During 1939 we produced 17.8 percent of the crude oil of the United States and 10.8 percent of the world's supply. The close relationship of California production and reserves to national production and known reserves is illustrated by comparing our 17.5 percent of the oil reserves of the Nation with the 17.8 percent of the 1939 national production. This close correspondence of production to reserves has been maintained for more than 5 years. Since 1867 California has produced 23.8 percent of the United States oil and 15.2 percent of the world oil with a value of more than $5,000,000,000 or about one half of the United States Government expenditures this year. I might add parenthetically that all of the oil production of the world to date would not pay the national debt of this country.

You learned in California that the oil industry of that State is unique in many ways, not the least of which are the almost exclusive marketing area it serves and the characteristically independent attitude of the oil producers whose support of the unusual system of self-regulation has for 11 years been maintaining the stability of the industry.

The purpose of my statement is to summarize as concisely as practicable the testimony presented before you in Los Angeles last month and to supply certain additional information which may assist you in carrying out the directions of House Resolution 290.

Although California has an oil and gas conservation statute, its principle function is to protect oil and gas sands from water damage and to prohibit the excessive waste of gas. These are conservation measures but the further conservation measure of restraining oil production to efficient rates and the consequent avoidance of possible underground waste is directed by the central committee. Neither the State nor the central committee undertakes the allocation of gas production quotas.

The Central Committee of California Oil Producers is an elected, representative group of 28 oil producers that for nearly 8 years has been functioning as a congress of oil producers and has done an altogether fine and creditable job of distributing the demand for California oil among the producers of the State, thereby currently attempting to maintain a balance between supply and demand. The central committee being purely voluntary in character and representative of fields rather than companies has no power of enforcing its recommendations nor any judicial body to review its decisions. The oil producers of California are in fact a small democracy and the central committee's success is due to closeness of its authority to the source of that authority; to the fact that its campaign for cooperation has been educational rather than compulsory and to its practical application of the tenth amendment to the oil industry of California.

The oil industry of California does not claim to be perfect but it does have a good idea of what constitutes perfection and it has made such progress in the past decade away from waste and toward all recognized ideals of oil and gas production that the great majority of oil producers believe that there is no need for Federal intervention in our purely intrastate business of producing oil.

Mr. Cole. At that point, might I ask you, on the subject of waste in California about this. The Week In Review is a publication of the California Oil and Gas Association which you represent?

Mr. Allen. Yes, sir.

Mr. Cole. The official publication?

Mr. Allen. Yes, sir.

Mr. Cole. In that publication of February 9, 1940, I find this paragraph:

> An investigation of the unnecessary waste of natural gas in some of the California oil fields was ordered by Governor Olson on February 3 in a letter to Ray L. Riley, chairman of California Public Roads Commission, and Richard Sachre, director of natural resources asking them to undertake the inquiry. Olson said the unnecessary waste of natural gas is a condition he desires to correct and "as far as is within my power to accomplish." The Governor said that his attention

had been called to the West Montebello oil field where he was informed that gas waste now amounts to 50,000,000 cubic feet a day.

Do you remember when we were in California, that a good many questions were asked about the West Montebello fiield, but we did not get much information. Since we left there this statement has been released by the Governor. I wonder if you would care to comment on it?

Mr. ALLEN. Mr. Chairman, as you remember, Mr. Garrison, chairman of the West Montebello operators' committee presented a statement at Los Angeles, at the hearings, in which he admitted that there was a large amount of gas waste going into the air, but that studies were under way to attempt to obtain an increased market for that gas.

The gas, needless to say, would not be blown into the air if the pipe line facilities were available for transmission of the gas to nearby Los Angeles. Since the date of the clipping that you read, it is my information that the courts of California have instituted further contempt proceedings against several operators of Montebello and are making a vigorous effort to enforce to a greater degree the State statute governing waste of gas.

Mr. COLE. What was the statement you just made about waste in California?

Mr. ALLEN. I said that the oil industry of California does not claim to be perfect, but it does have a good idea of what constitutes perfection and it has made such progress in the past decade away from waste and toward all recognized ideals of oil and gas production that the great majority of oil producers believe that there is no need for Federal intervention in our purely intrastate business of producing oil.

Mr. COLE. In the last part of that statement you just read you say that—

> The great majority of oil producers believe that there is no need for Federal intervention in our purely intrastate business of producing oil.

This is a summary of the statement you are reading from?

Mr. ALLEN. This summary of my complete statement is presented to save as much of your time as possible, Mr. Chairman.

Then, in the supplemental statement, Mr. Chairman, to which you refer, in next to the last paragraph on page 2 I do say this:

Continuing now with my summary:

> In regard to gas wastage at West Montebello, which is close to metropolitan Los Angeles, you were advised frankly and fully of conditions there by Mr. Robert H. Garrison who pointed out that the relative insignificance of the field as a gas reserve had the effect of rendering impractical any great investment in pipe lines or equipment to fully utilize the gas now being blown to the air. Reference is made to Mr. Garrison's statement for further details of West Montebello.

The quest for perfection in the production of oil has resulted in the formulation of the following program:

1. The discovery, development, and maintenance of sufficient petroleum reserves to: (*a*) Provide ample emergency capacity, (*b*) permit efficient production.

2. The production of these reserves at such a rate as to supply current normal demands, scrupulously avoiding the creation of any artificial shortage or surplus, both of which are inimical to the consumer.

3. The conservation of oil, gas, and energy by production at such rates within the consumer demand as to result in the most practicably efficient recovery.

4. The maintenance of sufficient supplies of surface storage to care for the usual seasonal and unpredictable fluctuations in demand.

There are many forces affecting the oil and gas industry in California, a brief summary of them being as follows:

1. California antiwaste statutes: (*a*) Protection of oil and water sand, (*b*) prohibition of gas wastage, (*c*) limitation of well spacing.

2. External forces: (*a*) Rapidly increasing taxes; (*b*) less income and smaller profits; (*c*) public opinion, often prejudiced.

3. Internal forces: (*a*) Competitive pressure still prevailing, (*b*) cooperative effort in self-regulation, (*c*) educational influences.

The surface and underground waste of oil and gas has become nearly obsolete in the past 10 years. Although the voluntary regulation of production began in 1929, a very considerable waste of oil and gas continued through 1930 but since that time steady progress has been made in waste prevention as the following brief notes will indicate.

In 1930, 39.5 percent of the natural gas produced in California was blown to the air. There has been a steady reduction of waste to the point where only 8.9 percent of the gas produced was blown to the air in November 1939.

In 10 years our rating on gas utilization has thus increased from 60.5 percent, which certainly is failing, to 93.1 percent.

It was not until after the effects of production restraint were studied that a method was found for determining the order of magnitude of oil sequestered underground by inefficient production practices. This method, developed originally to determine the degree to which production restriction tended to make curtailment self-perpetuating give a direct indication, within the range of its application, of the amount of oil sequestered by producing fields of the California type at greater than their optimum rates of flow and also provides a method for evaluating the oil left underground by fields now far past their flowing life.

Prior to 1930, the general wide open production practices in vogue are estimated to have sequestered underground about 8.9 percent of the amount produced. During the next 10-year period, the voluntary restraint of production to near-efficient rates in most fields had the effect of reducing sequestration to only 4.6 percent of the amount produced while present practice indicates a sequestration of only 1.8 percent of the production. Thus in 10 years our rating on sequestration of presumptive underground waste has increased from 91.1 percent to 98.2 percent.

It is true that these are over-all figures and that there are some fields somewhat worse than these figures indicate and many that are better, but the recognition of the ideal and the steady progress toward it indicates that the oil industry is conscious of the value of efficient production and conservation.

The regulation of oil production in California is based principally upon economic motives although the result has been conservation and waste reduction in addition to market stabilization. The method at present employed in the allocation of production in California is a mathematical one wherein every effective well is first allocated a minimum allotment based on the cost of drilling and producing a well of its depth, and commonly referred to as a "living wage" or "personal exemption." It then receives an additional allotment based on a function of its productivity and computed in such a way that it results in what is known as graduated curtailment, by which no well regardless of capacity receives a total allotment of more than 195 barrels daily in January 1940 with no well required to curtail below its living wage, and the percentage of curtailment required progressively increases with the productivity of the well. This method of allocation is accepted as equitable by that great number of producers to whom equity means equal treatment for wells of equal depth and productivity.

In my formal statement several topics are discussed that need not be more than mentioned at this time. Some of these are as follows: Some aspects of waste in California, underground waste debatable, a measure of presumptive waste, economic versus physical waste, the demand for California oil, shipments to Japan, production from the public domain.

CONCLUSION

California in many ways differs greatly from other States and not the least of these differences is the manner in which it conducts its oil business and regulates the production of crude oil to the demand therefor. This regulation is accomplished by voluntary effort and principally from an economic motive. However, this regulation as practiced results in conservation, largely reduces waste and increases ultimate recovery, besides stabilizing the market to the advantage of both consumer and producer. Although not perfect, the regulatory procedure established by the central committee for the voluntary participation of California oil producers, is believed by most producdrs and presumptively by the majority of the voters of California to be satisfactory enough to render Federal intervention unnecessary. That attitude is best set forth in unequivocal language by the resolution adopted January 11, 1940, by the California Oil & Gas Association in opposition to H. R. 7372 and put into the record of the Los Angeles hearings, and by the joint resolution adopted by the California State Legislature on February 17, 1940. These resolutions represent the attitude of the majority of California oil producers and California voters toward Federal control of the oil business.

Complete Statement of Robert E. Allen

The qualification of your present witness began in the oil fields of West Virginia with summer vacation work as tool dresser and well puller. Upon graduation from West Virginia University in 1920, with the degree of bachelor of science, in engineering and geology, I was advised by my friend and counselor, the late Dr. I. C. White, father of petroleum geology, to try my fortune in California. My first 10 years in California included geological, engineering, and supervisory work for five of the smaller drilling and producing companies of California, and 2 years as director of oil exploration in Australia. In April 1929 I was chosen to assist in formulating a program for the cooperative regulation of the impending flood of crude oil to the available storage facilities and market outlet. From that beginning has grown and developed the present organized system of maintaining ample reserve productive capacity coupled with the balancing of production of current consumption, with the resultant conservation of resources, occasioned by limiting the production of well to efficient rates of flow.

It was my privilege to be associated with this remarkable case of industrial self-management in the capacity of administrative assistant to four oil umpires and as executive secretary of the Central Committee of California Oil Producers for 4 years. In these positions it was frequently necessary for me to spend some time in Washington in cooperation with various Federal agencies both during and before the N. R. A. period during which the central committee was designated as the California agency under the Petroleum Code by Petroleum Administrator Harold L. Ickes.

Because of the obvious necessity of maintaining a consistent neutrality and an unbiased position during that period, I made it a rule to own no part of or interest in any oil production or oil company. Were it not for the fact that I would much rather be out drilling oil wells than appearing before this honorable committee, I might be classed as an oil consumer rather than oil producer.

THE CALIFORNIA OIL & GAS ASSOCIATION

The comparative importance of the California Oil & Gas Association, now represented, may be gaged from the fact that this nonprofit trade association, founded in 1907, now includes 130 of the principal producers, refiners, marketers, and royalty owners, and constitutes a complete cross section of the California petroleum industry. It numbers major, intermediate, and minor companies; dependent and independent producers; and very large to very small wells in its membership.

This association is not identified with the voluntary program for the regulation ot crude oil production nor is it affiliated or connected with the Central Committee of California Oil Producers which directs the cooperative adjustment of the crude oil supply to the current demand therefor.

In December 1939 its members had 12,146 or 65.4 percent of the 18,554 effective oil wells of the State, and they were credited by the oil umpire with 1,951,652 b/d or 77.3 percent of the 2,523,032 barrels daily potential production of the State. The total production allotment of members of the association amounted to 426,733 b/d, or 71.3 percent of the 598,050 barrels daily California production quota, while their total production amounted to 426,278 b/d, or 69 percent of the actual production of 611,309 barrels daily.

Thus the membership of the California Oil & Gas Association control at present a substantial two-thirds of the oil wells, potential production, allotted production, and actual production of oil and gas of the State, and in addition are estimated to have at least three-fourths of the petroleum reserves of the State. The members of the association would therefore bear the brunt of any Federal production control that might be enacted, as they are now bearing most of the responsibility for voluntary self-control. The enormous reserve capacity of the wells belonging to members of the California Oil & Gas Association likewise constitutes the most practicable and most readily available source of oil for emergency use and for national defense in the Pacific area.

IMPORTANCE OF CALIFORNIA AS AN OIL STATE

The history of commercial oil production in California began in 1867, only 8 years after the epoch-marking discovery of Col. E. L. Drake at Oil Creek, Pa., in August 1859. On the recommendation of Professor Silliman, of Philadelphia, who in 1864 observed the oil springs and seepage pits from which Jack Gilbert collected oil to operate his primitive refinery in the Ojai Valley of Ventura County, a syndicate headed by Thomas A. Scott, of Philadelphia, an official of the Pennsylvania Railroad and Assistant Secretary of War under President Lincoln, was organized to undertake the first exploitation of the oil resources of California.

This syndicate sent Mr. Scott's two nephews and a driller to California together with such necessary drilling equipment and machinery as was being used in Pennsylvania at that time. This party, composed of D. C. Scott, who with others built California's first refinery for oil from wells near Newhall in 1875; Thomas R. Bard, who later became a founder of the Union Oil Co., and a famous United States Senator; and A. J. Salisbury, the driller of many of the early wells of California. After purchasing the Ojai Ranch and other Sulphur Mountain properties near Ventura and Santa Paula, and after drilling five unsuccessful wells to various depths at a cost of more than $200,000, the famous Ojai No. 6 was brought in some time in July 1867, from a depth of 550 feet, as the first commercial oil well of California, with a production of 20 barrels daily which was maintained for years. This well, situated on the north slope of Sulphur Mountain near Sisar Creek, was located among the famous oil seepages that for untold centuries have been and still are wasting and dissipating the oil reserves of Sulphur Mountain, and today after 73 years of life still flows a little oil occasionally, as do also some of the old and abandoned tunnels that were driven in the south side of Sulphur Mountain by Leland Stanford at the same time the first wells were being drilled.

The completion of Ojai No. 6 and the gradually increasing use for its production led to the drilling of other wildcat wells in other parts of California, most famous of which was the Pico No. 1 drilled by C. A. Mentre in Pico Canyon in 1875 and which discovered 32° oil at only 75 feet. This well and property, together with the first pipe line to the first refinery built at nearby Newhall, became the California Star Oil Co. under the management of D. G. Scofield, and in 1879 was taken over and enlarged by the Pacific Coast Oil Co. to become the nucleus of what has grown to be the great Standard Oil Co. of California.

During the 8 years of production prior to 1876, California produced 175,000 barrels of oil. As the result of additional drilling and further discoveries, the Ventura-Newhall district produced and shipped 325,000 barrels of oil in 1885, a large part of which was moved to port by the first pipe line built to tidewater. This line was built from Santa Paula to Ventura by C. A. Burrows and was completed in 1885.

Since those early beginnings the California petroleum industry has grown to such a degree that it is now the second greatest industry of the State, exceeded only by agriculture. Exact figures are impossible, but it is estimated that nearly a million and a half people of the State derive all or part of their income from some part of the oil business.

During 1939 California produced almost 225,000,000 barrels of crude oil, or approximately 25,000,000 barrels less than in 1938. The production in 1939 amounted to 17.86 percent of the United States production of 1,255,000,000 barrels and 10.85 percent of the world production of 2,069,000,000 barrels. Since the beginning of the industry California has produced 5,346,000,000 barrels or 23.8 percent of the United States production of 22,442,000,000 barrels and 15.2 percent of the 35,239,000,000 barrels the world has produced during the past 80 years, a record exceeded only by mighty Texas with its 6,088,000,000 barrels or 27.1 percent of the United States and 17.3 percent of the world cumulative production. The value of California oil produced since 1867 amounts to nearly $5,500,000,000 or about one-half of the expenditures of the United States Government this year.

As the result of an unremitting quest for new reserves, California for the past 5 years has been able to maintain its percentage of the known petroleum reserves of the Nation at approximately the same figure as its percentage of national production. As of January 1, 1940, the known reserves of California are estimated by the Oil and Gas Journal at 3,447,000,000 barrels or 17.5 percent of the Nation's 19,687,000,000 barrels and during 1939 we produced 17.8 percent of the Nation's oil.

If production at a sustained rate equal to the 1939 rate were possible, the known reserves of the State would maintain that rate for 15.4 years, whereas the same index for Texas would be 22.2 years, for Oklahoma 6.7 years, for Illinois 6.7 years, for Kansas 12.4 years, for Louisiana 9.4 years, and for the entire United States 15.7 years.

Table I shows the relative position of California with respect to known reserves and current production as compared to the other five principal oil-producing States.

TABLE I.—*Relative position of principal oil States as regards annual production and known reserves, 1929–39*

[All figures are percentages of total at year end]

	Texas	California	Oklahoma	Louisiana	Illinois	Kansas	Big Bix	Others
1929:								
Production	29.5	29.0	25.3	2.0	0.7	4.3	90.8	9.2
Reserves	32.5	35.3	18.9	1.3	.5	3.8	92.3	7.7
1930:								
Production	32.4	25.3	24.1	2.6	.6	4.7	89.7	10.3
Reserves	36.1	33.5	15.8	1.6	.5	4.1	91.6	8.4
1931:								
Production	39.1	22.2	21.2	2.6	.6	4.4	90.1	9.9
Reserves	43.8	31.3	10.4	1.8	.4	3.2	90.9	9.1
1932:								
Production	39.8	22.7	19.5	2.8	.6	4.4	89.8	10.2
Reserves	45.0	32.3	8.3	1.5	.4	2.9	90.4	9.6
1933:								
Production	44.5	19.0	20.1	2.8	.5	4.6	91.5	8.5
Reserves	48.4	30.1	8.1	1.9	.3	2.6	91.4	8.6
1934:								
Production	42.0	19.2	19.9	3.6	.5	5.1	90.3	9.7
Reserves	48.8	23.9	9.1	3.8	.3	2.9	88.8	11.2
1935:								
Production	39.4	20.9	18.6	5.0	.4	5.5	89.8	10.2
Reserves	51.7	22.2	8.5	4.0	.2	3.4	90.0	10.0
1936:								
Production	38.6	19.5	18.8	7.3	.4	5.3	89.9	10.1
Reserves	52.6	20.5	7.8	4.1	.2	3.7	88.9	11.1

TABLE I.—*Relative position of principal oil States as regards annual production and known reserves, 1929–39*—Continued

	Texas	California	Oklahoma	Louisiana	Illinois	Kansas	Big Six	Others
1937:								
Production	39.9	18.6	17.9	7.6	.6	5.5	90.1	9.9
Reserves	54.6	18.6	7.4	6.0	.3	3.4	90.3	9.7
1938:								
Production	39.2	20.6	14.4	7.9	2.0	4.9	89.0	11.0
Reserves	54.5	18.3	6.7	6.0	1.4	3.5	88.4	11.6
1939:								
Production	38.9	17.8	12.2	7.5	7.3	4.7	88.4	11.6
Reserves	54.8	17.5	6.5	4.5	3.3	3.7	90.1	9.9

Sources: Minerals Yearbook. Facts and Figures, Oil and Gas Journal.

Comment: The increasingly dominant reserve position of Texas is well shown by this table, as is also its consistently lower rate of production than its share of reserves might justify. The relatively uniform production of oil in proportion to its reserves by California is well illustrated. The expansion of Illinois production at the apparent percentage expense of California and Oklahoma is indicated by the 1939 figures.

SUMMARY OF CALIFORNIA TESTIMONY

The petroleum industry of California is deeply conscious of the honor paid them by your committee in visiting for the second time in 5 years the State whose oil industry is unique in the United States, by reason of its size and comparative importance; because of the large marketing area which it is able to serve almost exclusively by reason of its remoteness from other centers of supply; because of the relatively difficult and expensive drilling and producing operations; and last but by no means least because of the characteristically independent attitude for which California oil producers are noted and which has become most apparent in their consistent division of opinion on the subjects of State control and the interstate oil compact, and in their support of and allegiance to the voluntary cooperative effort that for nearly eleven years has been keeping the industry of California as stable as have the laws of other States.

It is the purpose of this statement to summarize as concisely as practicable, the testimony presented before your committees in Los Angeles on January 16, 17, and 18, 1940, and to present in addition thereto certain information and data which were not presented at Los Angeles but which are either pertinent to House Resolution 290 or concerning which information was unsuccessfully sought by your committee at those hearings.

Conservation laws but no production-control laws.—You were advised by Governor Olson of California that the Atkinson bill which would have provided a State control for the oil industry, was decisively beaten by popular referendum on November 7, 1939, as had been a measure similar in principle and known as the Sharkey bill, which was defeated in the referendum election of May 1932. Since the President and the War, Navy, and Interior Departments urged the approval of the Atkinson bill it may be concluded that the people of the State do not favor either State or Federal control of the oil industry, at least so long as the industry itself is so divided on the subject of production control.

Although there is no regulation of production by the State, your attention was called by Mr. Morton and Mr. Cranson and other witnesses to the oil and gas conservation law which is Act 4916, statutes of 1915, as amended in 1917, 1919, 1921, 1929, 1931, 1933, and 1937, and again amended and incorporated in the public resources code of April 1939. These statutes which are strictly conservation laws are limited in scope to: (1) Protection of oil sands from water damage, (2) protection of public from oil-field operations, (3) maintenance of records of operation, (4) prohibition of excessive gas wastage, (5) prevention of overdrilling small tracts, (6) administration and supervision of laws.

From the conservation standpoint alone these conservation laws have tended to enforce good drilling and production practice as developed by the more progressive operators; to enjoin the excessive blow of gas to the air, which is defined as "prima facie evidence of unreasonable waste" by paragraph 3300 of the public resources code, and to correct relatively excessive gas oil ratios as defined by paragraph 3307. Most of the criticism of the oil and gas conservation laws of California relates to the slowness of the court procedure required to stop waste and to the absence of provisions which would tend to prevent the occurrence of gas waste rather than stop it sometime after it has occurred.

The questioning of witnesses developed a divided opinion on the desirability of additional State conservation laws, but all witnesses except one, unequivocally denied the need or desirability of H. R. 7372 for application to California. All witnesses, however, expressed satisfaction with the present distribution of demand among the producers of California and voiced their confidence in the character and accomplishments of the Central Committee of California Oil Producers.

Voluntary production regulation in California.—A very considerable portion of your time in California was taken up by almost continuous references to the Central Committee of California Oil Producers which all witnesses saluted in terms of highest approbation. The history and organization; work and allocation procedure; and administrative routine of this truly unique institution were recounted to you by Chairman Vander Leck; Subchairman Aubert and Umpire Pemberton.

You were told frankly that the regulation of oil production in California is regarded first and foremost as a cooperative, economic effort by nearly all of the oil producers of California to equitably adjust the production of oil from their wells to the normal capacity of the facilities available for handling it and to the regular and established market outlet for their product. Other reasons for the regulation of production are secondary but are increasing in importance. No little part of the central committee's work has to do with the possible effect of its regulation upon the consumer and from time to time consumers are invited to cooperate with the committee in an advisory capacity. This is done because the stabilization of petroleum product prices which may result from the balancing of supply and demand is as important to the consumer as to the producer.

Regulation born of necessity.—On April 15, 1940, the voluntary regulation of oil production in California will be 11 years old, having had its beginning in 1929 when a group of flush fields and deeper zones skyrocketed production nearly a hundred thousand barrels daily in

6 months and in the same 6 months added more than 20 million barrels of oil to storage. The development of these new sources of supply was conducted at such a frantic rate that despite the strenuous efforts of an appointive general committee and the first oil umpire, Mr. F. C. Van Deinse, the flood of production, which in August 1929 amounted to 935,859 barrels daily of crude oil and natural gasoline, of which nearly 6 million barrels was added to storage, was not stemmed until after the famous 5-day flow tests of February 1930, as the result of which oil in storage in California reached an all-time peak of 187 million barrels. This represented an increase of 52 million barrels, or 39 percent, in 15 months and constituted not only an economic loss but also resulted in great physical waste. It imposed a load on the California industry that even the best cooperative endeavor, when faced with the declining demand of the depression period, could not remove until November 1934, when stocks were again reduced to 135 million barrels after 3 years of voluntary restraint by California producers. During this period production reached a low monthly average of 432,741 barrels daily in March 1933, partly by aid of an earthquake, which by showing the danger of filling storage tanks above safe level, automatically reduced the storage capacity by about 15 percent.

The general committee, which functioned as the directive force behind the program of production regulation until after the defeat of the Sharkey bill in May 1932, was composed of a score of representatives of the principal producers of California. Some of the most popular members were also representative of certain important fields, and in reconstructing the regulatory machinery this principle of representative government was followed exclusively.

A congress of oil producers.—The present central committee thus had its birth in 1932 and now consists of 28 members or directors, each of which represents an important field or producing district and each of which is annually elected by the producers of his district, of whom each has only one vote regardless of size or volume of production.

The central committee is therefore an elected representative body which in effect is the Congress of California Oil Producers. It even has its standing and investigating committees. Unlike Congress, however, it has no executive branch and no president, the oil empire being an administrative rather than an executive officer; neither has it any power of enforcing its recommendations, nor any judicial body to review its decisions. These latter two deficiencies which at times are sorely felt have to date been impossible to supply to a purely voluntary group even though its organization and character of its actions have earned for it the status of a quasi-governmental agency, particularly so, since its recognition as such during the N. R. A. period from September 1933 to May 1935.

The oil producers feel that the central committee is truly and fairly representing them and is doing a better job of production regulation than any appointive State or Federal control commission would do. The success of the central committee arises from the fact that it conforms to the simple principle that the authority of a successful democracy must lie close to the source from which that authority derives, and to the further fact that its campaign for cooperation among the oil producers of California has been based upon education rather than compulsion.

The central committee has by act and deed merely been applying the tenth amendment of our Constitution to, for, and by the oil producers of California.

The California program.—In common with other oil States of the country, California in the past wasted much of its oil and gas in the process of producing them. Millions of barrels of oil were lost above ground and other millions were lost underground, while uncounted billions of cubic feet of natural gas and its accompanying energy have been blown to the air—all in ignorance or careless disregard of such principles of efficient porduction as may or may not have been known to the producers. Although the next generation may decry our present efforts at economic adjustment and resource conservation, it is our present belief that the oil industry has made such progress in the past decade away from waste and toward all recognized ideals of oil and gas production that there is no need for Federal intervention in our purely intrastate affairs. No claim is made of having attained perfection in the production of oil and gas for the greatest ultimate public benefit but in our opinion neither can the Federal Government claim perfection in any single one of its multifold activities.

At present the quest of perfection in the production of oil in California has resulted in the development of the following program:

1. The discovery, development, and maintenance of sufficient petroleum reserves to: (*a*) Provide ample emergency capacity, (*b*) permit efficient production.

2. The production of these reserves at such a rate as to supply current normal demands, scrupulously avoiding the creation of any artificial shortage or surplus, both of which are inimical to the consumer.

3. The conservation of oil, gas, and energy by production at such rates within the consumer demand as to result in the most practical efficient recovery.

4. The maintenance of sufficient supplies of surface storage to care for the usual seasonal and unpredictable fluctuations in demand.

Needless to say, this program is an expensive one. Exploration, drilling, increased taxes, and other charges all make the discovery and development of reserves a costly operation while the slower rate of recovery and the longer deferment of income makes the business of protecting the public more and more difficult for oil companies. The industry has ample reason to fear that more Federal intervention will make existence even more difficult. A summary of the forces now controlling the oil and gas industry in California is somewhat as follows:

1. California antiwaste statutes: (*a*) Protection of oil and water sands, (*b*) prohibition of gas wastage, (*c*) limitation of well spacing.

2. External forces: (*a*) Rapidly increasing taxes;[1] (*b*) less income and smaller profits; (*c*) public opinion, often prejudiced.

3. Internal forces: (*a*) Competitive pressure still prevailing; (*b*) cooperative effort in self-regulation; (*c*) educational influences.

These are the forces affecting every oil producer of California, be he large, small, or just medium. The strain of trying to maintain position is becoming terrific, especially as necessity of maintaining position is apparently greater under a self-regulated program than under cut-throat competition.

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[1] An actual typical example of the increasing taxes paid by California oil producers is the case of company averaging about 900 barrels daily from about 50 wells. The State and county taxes alone have amounted to a charge on each barrel of production as follows: 1934, 4.08 cents; 1935, 4.46 cents; 1936, 5.41 cents; 1937, 7.25 cents; 1938, 8.21 cents; 1939, 8.70 cents. At present these taxes amount to 14 percent of the price received for the crude oil.

Not the least of the difficulties confronting all efforts to balance production and conserve petroleum resources in California, as elsewhere, is the fact that although oil producers are generally classified as major, intermediate, or minor, according to their stature and resources, there are really only two classes, the permanent and the temporary. Those companies classed as permanent are to a great degree public institutions with their widespread ownership and with their established place in the national economic system. To them loss of relative position is a serious thing because it signifies that their place in the public interest is threatened. To assure their public of continued service and existence it is necessary for them to explore and exploit new reserves of oil and to maintain a constant reserve against periods of emergency and unsuccessful exploration. Oil producers of this class have a much longer perspective of their business than do those many smaller producers whose interest in the oil business is primarily limited to one or two generations. With some recognition of their public obligation but with a greater obligation to themselves and their families those smaller producers are interested primarily in making their money from the oil business in time to reap the greatest benefit themselves. Their ambitions are entirely natural and understandable and to a great degree have the sympathy of the public, but nevertheless this same attitude is the one which is most resistant to any kind of regulation or control that will tend to deprive them of the earliest possible benefits from their business. It is only by continuous and considerate education that such producers come to participate in voluntary self-regulation under the direction of the central committee.

Unusual California regulatory procedure.—Any discussion of either the method or the effect of production regulation in California would be incomplete without some further comment on the entirely different procedure used in California and described in some detail by Mr. Aubert at the Los Angeles hearings. He explained that instead of the conservation requirements of each field being the base of the field production quota, as is the case in many States, quite the opposite is true in California where the current demand quota of the State is divided uniformly among all of the effective wells of the State and the field quota is the sum of the quotas thus assigned its wells.

Instead of using engineering factors in the computation of individual well allotments a purely mathematical formula is used. For example the well allocation formula for January 1940, was as follows:

$$A_m \text{ plus } A_r \text{ equals } A_t \ (195)$$

Where A_m equals minimum allotment equals $D\left(\frac{9 \text{ plus } D}{2}\right)$

A_r equals remaining allotment equals $(F_a - A_m) \cdot 744$
A_t equals total allotment equals not more than 195 barrels daily
D equals depth in feet divided by 1,000
F_a equals factor of allocation equals allocation potential.

For example: A well 8,000 feet deep with an allocation factor (potential) of 1,100 barrels daily would receive a minimum allotment of 68 barrels daily plus a remaining allotment of (1,100–68)·744 equals 175 barrels daily, or a total of 242 barrels daily, which however exceeds the maximum allotment, so the well receives only the maximum allotment of 195 barrels daily, which means a curtailment of 82 percent of its rated potential.

Another example is a well 5,000 feet deep with an allocation factor of 295 barrels daily. It received a 45-barrel daily minimum allotment plus (295–45)·744 equals 61 barrels daily remaining allotment, or a total allotment of 106 barrels daily which represents a curtailment of 64 percent of its rated potential.

From the above examples it is evident that the formula used effects a graduated curtailment ranging from very severe on very large wells to nothing whatever on marginal wells. The minimum well allotment is known as the "living wage" or "personal examption" in California, while the graduated method used is commonly referred to as "income tax" curtailment.

It is admitted that this particular "uniform method" which is the product of years of trial and error has no more engineering justification than hundreds of other similar uniform methods that might be mathematically devised. However, it has accomplished a very considerable measure of compliance with the recommendations of the central committee and is accepted as equitable by that great number of operators to whom equity means equal treatment of equal wells. Whether this formula would be acceptable in reducing the production of the State another 100,000 barrels daily is conjectural. Whether it would be upheld by the courts if a test case were brought, is problematical. It is an inescapable fact, however, that compliance has been better since the adoption of this formula than ever before under the voluntary program.

Producers do not manipulate prices.—The difference between price manipulation and price stabilization is a much misunderstood subject even in these days of adjustable economic theories and because of this possible misunderstanding California oil producers under their voluntary regulation of production to bring about ratable production and ratable participation in the market have never done more than merely attempt to balance their production with current demand in the expectation that the price received for their product would be a fair proportion of that paid by the ultimate consumer and likewise a fair expression of its intrinsic value.

At times they have seen weaknesses in their cooperative endeavor result in material softening of prices as a consequence of their attempt to force excess quantities of their product on unwilling buyers but their credit may it be said that there has never been the slightest suggestion of proposal to create an artificial shortage for the purpose of forcing a raise in crude oil prices. This forbearance is not due so much to a realization that such an attempt would probably be abortive by reason of the delicate margin by which California retains control of its natural market against other United States and foreign oil, but rather to the innate desire of every producer to produce as much oil as is reasonably possible, taking both market outlet and operating efficiency into consideration.

Also taken into consideration by California oil producers in their refusal to advantage themselves by the creation of synthetic scarcity is the fact that the consumer inevitably suffers more in periods of famine than he prospers during times of feasting. By meeting willing demand with a product at a fair price, even with the taxes imposed upon it, the producer and the consumer work together toward smoothing out the peaks of overproduction and the valleys of underproduction that cause alternating poverty and prosperity to both.

The balancing of supply with demand is not price juggling or manipulation but is simply the stabilization of one economic force in the hope that price stabilization will follow. Due to factors beyond control of producers this does not necessarily happen.

Some aspects of waste in California.—As previously intimated, no denial is made that some avoidable waste of oil and gas still persists in California despite the efforts of the State, the central committee and all educational efforts. The same condition applies in other industries just as strongly as in the oil industry. This is no defense but it may be observed that if waste were not so prevalent there would be no scrap piles, no worthless inventories, no rolling stock nor vessels slowly rusting away in disuse. Waste generally results from error and carelessness and who of us is without these?

Some of the past wastes of California are worth mentioning. Of the surface waste of oil the most conspicuous example is the destruction by fire of more than 8,000,000 barrels of crude oil when several of the tank farms of the State were struck by lightning in 1926. Then there have been several wells which got out of control and flowed over the landscape for days, most famous of these being the Lakeview gusher of March 1910, which spewed out over a million barrels in 90 days, only a portion of which was saved. A wild well is now a genuine rarity in California.

The past gas wastage in California is beyond estimate. As in other States, production practice prior to 1930 often included the blowing of gas cap wells until oil came in; the blowing to the air of practically all gas produced by high-ratio wells, and similar cases. Now, however, you were told by Messrs. Cranson, Hall, and Garrison that the gas waste of the State was well within industrial tolerance and within the limits set by the State, and that the three most prolific gas fields at present, namely, Belridge, Kettleman Hills, and Ventura Avenue were now setting an enviable record in gas utilization and that other fields of importance are rapidly reducing their waste by cooperation and by State action. Table II presents the current position of the principal gas fields of the State.

TABLE II.—*Principal gas production and blow*

	June 1939		November 1939	
	Cubic feet	Percent blown	Cubic feet	Percent blown
Belridge	3, 127, 000, 000	4. 4	3, 955, 000, 000	2. 8
Kettleman Hills	7, 647, 000, 000	1. 4	8, 119, 000, 000	. 5
Ventura Avenue	2, 863, 000, 000	6. 5	3, 370, 000, 000	1. 7
Montebello	1, 214, 000, 000	49. 0	2, 294, 000, 000	49. 8
Rosecrans	1, 186, 000, 000	42. 5	1, 031, 000. 000	15. 5
Wilmington	1, 975, 000, 000	23. 1	2, 129, 000, 000	9. 6
California	28, 048, 000, 000	10. 5	29, 904, 000, 000	6. 9

Comment: These figures show the seasonal effect on production and waste and likewise indicate the progress made in gas conservation in 5 months.

It must be again mentioned that West Montebello, Rosecrans, and Wilmington are fields where there are many small properties and many diverse operating interests, all of which would be affected very materially by any utilization designed to limit these three fields to their optimum rate of production. West Montebello is currently producing less than its uniform quota of oil but a large gas cap and a narrow rim of oil, together with a redistricted outlet for the rather limited gas reserves of the field, constitute a problem that might well tax the ability of any constituted authorities.

In connection with the many claims of gas wastage on account of lack of outlet it must be remembered that there is no allocation of the gas demand among the gas producers of California. The central committee does not concern itself with gas problems even though the gas being blown to the air comes almost entirely from oil wells that are subject to restriction of oil production. The efforts of the State authorities are limited to reducing the amount of gas blown to the air so that the actual production of gas as such is unrestricted.

In connection with gas wastage generally it should be stated here that waste and inefficient utilization are synonymous to me from the viewpoint of an engineer. I therefore see no essential difference between a reasonable inefficiency in production, coupled with a moderate and tolerable blow above ground and the inefficient use of the same gas for fuel where the waste of heat energy is seldom less than 30 percent of the amount used. In other words, I believe conservation should begin with the producer and end with the consumer, but you gentlemen well know how impracticable and inexpedient any such contemplated legislation would be.

Underground waste debatable.—While in California you heard several witnesses state that as much as 50 percent of the original oil present in a sand might be left underground at the conclusion of normal production operations, but that in the course of time, the same forces that originally acted to accumulate and concentrate the deposit of oil would again accumulate it and eventually render it available for later production.

It must be stated here that the 50-percent figure applies to the reserves of oil that may be left if wasteful and inefficient methods of recovery are employed. This figure is obtained by the following process of reasoning.

Depending on the porosity of sand, the connate, or original water in the sand which could not be displaced by the accumulation of oil may amount to from 10 to 30 percent of the pore space. Thus the amount of connate water pressent must be subtracted from the possible content of the sand.

Depending again on the character of the sand, as much as 30 percent of the oil originally present may be so firmly attached to the sand particles that nothing short of distillation or solution will remove it. This figure may be less than 30 percent but the percentage stated is not abnormal for some of our heavy California oils. In the case of lighter oils in deeper fields the percentage of the reservoir hydrocarbon content recovered as oil may be considerably less than 70 percent because of thermal shrinkage and the escape of volatile and dissolved constituents.

Of the oil which is recoverable it is difficult to actually recover more than 70 percent under conditions of open flow. As the release of gas from solution increases the viscosity of the oil, a larger and larger film is formed and the mobility of the oil is so decreased that it can only move through the sand with the greatest difficulty. Therefore it is neither impossible nor unlikely that as much as 30 percent of the recoverable oil may be left in the sand for our posterity.

Now if 30 percent of the oil is practically unrecoverable by best production methods and poor production methods have the result of failing to recover an additional 30 percent of the recoverable oil, then only 70 percent of 70 percent, or 49 percent of the original oil is actually recovered by reason of a combination of physical conditions with inefficient methods.

Contrasted with these possible poor percentages of recovery are those obtained by careful analysis of cores taken from spent sands in some of our more depleted fields that have been produced efficiently. Some of these cores show that after a water drive has passed, as little as 12 percent of the original content of oil is left in the sand. With an increasing amount of information on this subject it soon becomes possible to form reasonable estimates of the amount of oil left in the sand at different rates of flow and the most efficient rates may accordingly be determined.

If oil is left in the sand by excessive rates of withdrawal, waste may be charged if such oil is in fact forever irrecoverable. But if the recovery of additional oil only awaits better economic conditions and improved secondary methods then the most that can be said about the practice is that it is inefficient, and of this fact the industry will become as conscious and as anxious to correct without Federal persuasion as with.

The growing technology of oil production has brought advancement to the industry. It has also disclosed problems to solve that were unsuspected 10 years ago; not the least of which is the determination of the proper rate of production for some of our deeper California fields, where shrinkage from reservoir to tank runs as high as 50 percent and where the problems of bubble point and retrograde condensation are extremely important. It is the belief of many producers that the Federal Government can best assist in solving these problems by continuing its independent and thoroughly satisfactory investigations into the pure science of petroleum.

A measure of presumptive waste.—It was only a few years after the start of production regulation in California that a previously little known condition became quite evident. Producers began to observe that in uniformly restricted production areas wells began to show evidences of greater ultimate production, longer life and better pressure maintenance than was to be expected in proportion to the degree of curtailment. In the words of the producers "curtailment became self-perpetuating" and the greater the degree of curtailment, the more the more disproportionate became the apparent gain therefrom. In fact, one of the surest measures of the actual restricting made by an operator was the degree to which his apparent ultimate production had increased by reason of his reduced rates of flow.

This led to the suggestion of a procedure for measuring to some degree the extra amount of oil that might be obtained by optiumm rates of production and conversely provided an indication of the amount of oil that might be left underground by wide-open or inefficient rates of production. The rate-cumulative curve, in which the rate of production is continually plotted against the cumulative production to date, indicates by extrapolation, within the limits of its successful application, the ultimate production to be expected from a well, property or field at any time. It likewise provides an excellent index of drainage interference and also provides one of the earliest determinations of the optimum rate of production when surface pressure decline is plotted against cumulative production.

The actual application of these rate-cumulative graphs to the production of several California pools confirmed to a great degree some earlier existing suspicions regarding the undesirability of producing wells at their maximum rates. In noncompetitive areas where the drainage area might be a large one, there were occasions where the ultimate production might be increased more than 30 percent by restraining the rate of withdrawal to an amount equal to less than 20 percent of its potential rate of flow. On this basis the possible or prospective quantity of oil which may be left underground at different rates of flow may be approximately evaluated and an indication of the order of magnitude of underground sequestration be obtained.

It was interesting to note that the percentage of their remaining ultimate production produced by settled fields of California averaged about 6 to 8 percent per year. As of any particular time this rate of recovery indicates 40 and 30 years of life, respectively, before the reserves are reduced to only 10 percent of the quantity remaining as of the base date. Since the high productive efficiency of settled water-drive fields is axiomatic, it appears that one of two courses may be followed from the very beginning of production obtain reasonable efficiency of recovery.

If an almost constant production is required during the life of the field, a 30- to 40-year productive period may be assumed and the field produced so as to yield from 2½ to 3 percent of its estimated ultimate each year. If it is desired to combine an earlier payout with reasonably efficient production then the basis of production may be established at 6 to 8 percent of the reserves remaining as of the beginning of each year. Practical and economic considerations therefore suggest that this latter procedure may be accepted as a present measure of efficient operation as contrasted with the 25 to 30 percent initial annual recovery by wide open flow which in characteristic California fields may be coincidentally expected to leave a percentage of recoverable oil in the ground closely approximating the percentage of the ultimate extracted the first year.

By applying this measure of efficient recovery to California fields we find first that the production of 5,346 million barrels of oil by California to January 1, 1940, has resulted in the recovery of 66 percent of its known recoverable ultimates of that date. In 1939 California produced 6.7 percent of its known reserves as of January 1, 1939, but only 2.5 percent of its currently known ultimate production. These figures indicate that the State as a whole is producing at an efficient rate as measured by the criterion above mentioned. However, average and overall figures may be the most deceptive things imaginable and may conceal great departures from the normal by individual units. A tabulation of some of the better known and more important California fields on the indicated basis is as follows:

TABLE III.—*Comparative depletion rates of typical California fields*

	1939 production versus reserves		July 1, 1939 percentage of reserves remaining
	Percentage of remaining	Percentage of ultimate	
Belridge North	4.2	3.2	74.77
Kettleman North	3.1	2.3	75.12
Ventura Avenue	6.2	3.1	49.05
Montebello West	16.0	13.8	86.80
Wilmington	9.9	8.2	83.00
Coalinga Nose	.5	.5	99.66
Ten Section	3.8	3.6	94.05
Rio Bravo	6.4	6.0	92.73
Fruitvale	9.4	5.4	57.50
Coyote West	4.2	1.9	46.88
Mountain View	13.0	5.5	42.30
Dominguez	9.4	4.0	41.85
*Play del Rey	9.4	2.8	30.87
*Huntington Beach	12.6	2.8	22.63
*Rosecrans	35.8	10.2	22.32
*Long Beach	10.6	2.2	20.77
Midway	8.6	1.8	20.49
Brea Olinda	5.0	1.0	19.51
Torrence	28.0	6.4	16.70
Coalinga	3.8	.6	15.29
Kern River	5.8	.3	5.54

Comment: All types of production practice are illustrated in this tabulation. The effect of town-lot drilling on rate of depletion is well illustrated in (*) fields. An indication of the relative production efficiency is obtained by comparing the production-reserve percentage of the different fields.

By a tedious process of computation by the method indicated, an estimate of the oil probably rendered commercially irrecoverable by past rates of withdrawal can be made. Such an estimate shows that the production of 3,309 million barrels of oil by California prior to 1930 may have resulted in the underground sequestration of approximately 8.9 percent of the amount produced. During the next 10 years to January 1, 1940, California produced 2,079 million barrels of oil and left an estimated 4.6 percent sequestered underground, while at the present rate of depletion it is estimated that this sequestration of oil amounts to only 1.8 percent of the current production of 225 million barrels in 1939, and should improve to less than 1 percent as the more conservatively drilled and produced fields produce more of the State's oil.

This record of constantly improving production efficiency belongs solely to the California industry itself unaided by Federal control. There is no reason for supposing that Federal control would have accomplished any better record nor is there reason to assume that Federal control might do better in the future.

Economic versus physical waste.—Nowhere more so than in California is the interlocking of economic and physical waste more pronounced. So inextricably connected are they that it is often most confusing to attempt separating the cart and the horse, or cause and effect.

Economic waste, as represented by overdrilling, overinvesting, overproducing market requirements, and so forth, all of which are drains upon the industry and only an apparent temporary advantage to labor and the consuming public, is one of the principal causes of the physical waste which occurs when producers hastily and inefficiently try to recover their economic losses. Such physical waste frequently results in price depression, prices less than intrinsic value, unemployment, and general demoralization of the industry, which in turn results in further depreciation of the product and less care being taken to protect a commodity of little value. The remark has been frequently made that valuable diamonds are seldom wasted except by being put on the finger of the wrong girl, by which is implied the importance of maintaining a decent order of values for the product if physical waste is to be prevented in the oil industry.

Therefore it must be borne in mind that for both the oil producer and consumer, physical waste results in economic waste and economic waste causes physical waste. One cannot exist without the other and both are the objects of an intensive elimination campaign by the oil industry of California.

Increased reserves by improved practices.—Contributing to the steadily increasing percentage of recovery of California reserves are the many great improvements in drilling and production procedure as outlined by Mr. Whaley in his statement made at the Los Angeles hearings. The development of the modern cementing technique for excluding water from oil and gas sands has alone saved millions of barrels of oil for production and use. Better drilling equipment and stronger casing coupled with the most advanced coring and completion practices have rendered available additional huge reserves of oil, while steady and remarkable progress in production methods are continually making possible the economic production of greater percentages of the recoverable oil. An ample backlog of reserves coupled with a voluntary restriction of oil to the efficient rates imposed by a limited demand results in the slow rate of recovery which is so necessary in preventing waste. The spacing of wells has shown a steady trend for the better and while the entire subject of well spacing is the subject of the most searching study at present, the general belief is growing that the spacing of wells will automatically take care of itself when a fully adequate and equitable method of production allocation is put into effect.

An almost equally important effect on our oil reserves has been that of the tremendous improvements in our refining processes, which by getting 2 gallons of motor fuel where only 1 was obtained before, has practically doubled our reserves of motor fuel. Mr. Beddow discussed this topic at some length and hinted that even more sensational advances were shortly to come. The United States Bureau of Mines through its representstives who appeared before this committee at its November hearings in Washington has covered the subject of improved methods in the industry so fully that further comment need not be made at this time.

The demand for California oil.—Since the regulation of crude oil production in California is based entirely upon the current demand, as estimated either by the central committee or the United States Bureau of Mines, a brief consideration of that demand may be helpful. The important features of that demand are shown in table IV which proves that the Pacific area is peculiarly a California market but that a certain amount of long-established business is done with our own eastern seaboard and with Europe. It appears altogether likely that part of our Pacific, Atlantic, and intercoastal market may eventually be lost to foreign oil fields, in which case it is to be hoped that our own Pacific coast market will expand simultaneously.

An interesting condition that has prevailed for years in the Pacific coast oil market is the relative inelasticity of that market. Price changes in either direction show a slight corresponding change in demand but the change in market demand is usually of only about half the magnitude of the change in price, particularly in the case of the big-money product—motor fuel. With this situation prevailing it is understandably difficult for any marketing company or group to manipulate prices for any length of time or for any notable profit to themselves and it is virtually impossible for the producer to affect the market in any way except by dumping his production. This condition of affairs explains the relatively slight fluctuation in unit demand for California oil during the past 5 years.

TABLE IV.—*The market for California petroleum*

[All figures in thousands of 42-gallon barrels]

	Pacific demand			
	Pacific coast (including losses)	Alaska and Hawaii (including losses)	Rail-truck shipments	Pacific area total
1929 [1]	175,705	4,970	----------	180,675
1930 [1]	169,067	5,731	----------	174,798
1931 [1]	147,221	4,952	271	152,444
1932	137,237	4,209	1,540	142,986
1933	137,285	3,940	1,394	142,619
1934	142,463	4,628	1,856	148,947
1935	154,295	4,865	2,024	161,184
1936	166,996	5,296	2,671	174,963
1937	181,348	5,509	2,916	189,773
1938	162,188	4,955	2,556	169,699
1939	173,912	5,822	2,541	182,275

	Inter-coastal shipments	United States total domestic demand	Foreign		Total demand
			Atlantic foreign	Pacific foreign	
1929 [1]	29,256	209,931	13,693	43,182	266,806
1930 [1]	25,005	199,803	14,660	41,663	256,126
1931 [1]	17,167	169,611	6,612	34,575	210,798
1932	12,037	155,023	6,311	32,066	193,400
1933	21,020	163,639	3,458	31,000	198,097
1934	24,719	173,666	3,192	37,000	214,014
1935	9,767	170,951	5,802	40,270	217,023
1936	7,991	182,954	6,592	39,924	229,470
1937	5,929	195,702	9,065	54,307	259,074
1938	5,422	175,121	8,554	53,012	236,687
1939	8,470	190,745	6,274	49,350	246,369

[1] Losses not reported.

Source: California Oil and Gas Association and U. S. Bureau of Mines.

Shipments to Japan.—There has been so much comment regarding shipments of oil from the United States to Japan, and principally from California, that it is considered advisable to include in this statement such information as is officially available concerning the quantity and value of those shipments. Tables V, VI, and VII, have been compiled and are presented herewith. The steady growth of our Japanese business as their demand has increased is shown in table V, while the satisfactory returns for the oil sent to Japan are indicated by table VI. Table VII shows again the relatively steady character of California exports to Japan and other countries during the past 3 years. It shows also the percentage constancy of our own Pacific area demand.

TABLE V.—*United States exports to Japan (including Kwantung) from Oil Producers Agency—total petroleum by years*

[In thousands of barrels]

	Crude	Gasoline	Fuel [1]	All other [1]	Total
1929	2,476	1,006	5,233	1,968	10,683
1930	2,926	1,104	5,699	1,531	11,260
1931	3,606	1,283	5,437	646	10,972
1932	4,877	991	4,986	1,192	12,046
1933	5,533	1,054	5,182	700	12,469
1934	6,774	1,224	7,929	816	16,743
1935	10,855	907	9,335	374	21,471
1936	10,466	1,174	9,307	330	21,277
1937	16,668	1,481	10,621	946	29,716
1938	22,206	2,121	8,327	508	33,162
1939	16,935	2,119	9,962	865	29,881

[1] "Fuel" includes gas oil and Diesel; "All other" is kerosene and lube oils only.

Source: 1929–37, inclusive, from "Petroleum Facts and Figures, sixth edition." 1938–39 from Oil Producers Agency.

Comment: The stable character of United States oil exports to Japan is clearly shown by the above table.

Prior to 1938 nearly all of the United States oil exports to Japan were from California. During 1938 it is estimated Texas shipped around 500,000 barrels of oil to Japan. Last year's Gulf-Japan movement is estimated at close to 1,200,000 barrels. California's shipments to Nippon in 1938 were 31,550,000 barrels or 86,400 b/d—in 1939 they fell off 10.9 percent to 28,109,000 barrels or 77,000 b/d. (These data on California exports do not include package shipments—only bulk movement by tanker.)

Shipments from the Western Hemisphere to Japan in 1939 also included 170,000 barrels from Mexico and 200,000 barrels from Ecuador. These figures are probably conservative as they compromise cargoes of only those tankers bunkering at Los Angeles Harbor en route to Japan.

TABLE VI.—*Value of petroleum exports, United States to Japan and Kwantung*

	1937 [1]		
	Quantity, barrels	Value	Average value
Crude petroleum	16,668,000	$23,077,000	$1.39
Gasoline	1,481,000	4,815,000	3.24
Gas and Diesel oil	6,576,000	7,564,000	1.15
Residual fuel	4,045,000	3,632,000	.90
Other products	946,000	6,675,000	7.07
Total	29,716,000	45,763,000	1.53
	1938 [2]		
Crude petroleum	22,206,000	$31,328,000	$1.42
Gasoline	2,121,000	9,440,000	4.45
Gas and Diesel oil	5,297,000	6,675,000	1.26
Residual fuel	3,030,000	2,532,000	.84
Other products	508,000	3,555,000	7.03
Total	33,162,000	53,530,000	1.62

[1] A. P. I. Facts and Figures and U. S. Department of Commerce.
[2] A. P. I. Facts and Figures and U. S. Department of Commerce.

TABLE VI.—*Value of petroleum exports, United States to Japan and Kwantung*—Continued

	1939 [3]		
	Quantity, barrels	Value	Average value
Crude petroleum	17,224,000	$23,907,000	$1.39
Gasoline	2,037,000	10,633,000	5.22
Gas and Diesel oil	5,892,000	6,599,000	1.12
Residual fuel	3,831,000	3,105,000	.81
Other products	812,000	4,955,000	6.11
Total	29,796,000	49,199,000	1.65

[3] Oil Producers Ageny (California) and U. S. Department of Commerce (preliminary).

TABLE VII.—*Comparative importance of California exports to Japan, 1937–39*

	Pacific area demand		Japan exports		All exports		Total demand	Total supply	Stock change
	1,000 barrels	Percent of total	1,000 barrels	Percent of total	1,000 barrels	Percent of total			
1937	189,773	73.2	29,045	11.2	63,372	24.4	259,074	255,200	−3,186
1938	169,699	71.7	31,428	13.3	61,566	26.0	236,687	267,272	+30,458
1939	182,275	74.1	27,662	11.2	55,624	22.6	246,369	240,901	−5,622

Source: U. S. Bureau of Mines; California Oil & Gas Association.

Comment: These tables should go far toward indicating the relative importance of the Japanese market to the California petroleum industry and toward answering questions regarding the prices obtained for the various products.

Production from the public domain.—During the appearances of Mr. Pemberton and Mr. Hogan before this committee in Los Angeles, there was some discussion of the amount of oil produced on the public domain in California. Mr. Hogan has furnished the following table VIII for the purpose of calling attention to the very considerable production obtained from Government lands in California.

TABLE VIII.—*1938 production from Government land in California*

	Number of wells	Crude oil, barrels	Gas, cubic feet	Gasoline, gallons
Public land	936	17,966,000	38,124,000,000	65,604,000
Naval reserve	426	4,077,000	2,356,000,000	10,414,000
Total	1,362	22,043,000	40,480,000,000	76,018,000

Source: A. P. I. Facts and figures.

Comment: For many years past the Government-owned lands in California have produced each year more than twice the annual oil requirements of the United States Navy, although in 1938 amounting to only 8.8 percent of the State's production. All Government-owned lands in the entire United States are producing more than seven times the Navy needs.

Conclusion.—California in many ways differs greatly from other States and not the least of these differences is the manner in which it conducts its oil business and regulates the production of crude oil to the demand therefor. This regulation is accomplished by voluntary effort and principally from an economic motive. However, this regulation as practiced results in conservation, largely reduces waste and increases ultimate recovery, besides stabilizing the market to the advantage of both consumer and producer. Although not perfect, the regulatory procedure established by the central committee for the voluntary participation of California oil producers, is believed by most producers and presumptively by the majority of the voters of California to be satisfactory enough to render Federal intervention unnecessary. That attitude is best set forth in unequivocal language by the resolution adopted January 11, 1940, by the California Oil & Gas Association in opposition to H. R. 7372 and put into the record of the Los Angeles hearings. That resolution represents the attitude of the majority of California oil producers toward Federal control of their business.

I will file this supplement statement regarding the specific instances of oil and gas waste in California as cited by the Department of Interior in its supplemental statement:

SUPPLEMENT TO STATEMENT OF ROBERT E. ALLEN OF LOS ANGELES REPRESENTING CALIFORNIA OIL AND GAS ASSOCIATION REGARDING "ALLEGED INSTANCES OF AVOIDABLE WASTE" CITED BY UNITED STATES GEOLOGICAL SURVEY, UNITED STATES BUREAU OF MINES, AND PETROLEUM CONSERVATION DIVISION

In the exhibits A, B, and C filed by the United States Geological Survey, the United States Bureau of Mines and the Petroleum Conservation Division to illustrate waste as defined by H. R. 7372, three currently important California fields are listed as examples of present waste, while four others are mentioned as earlier examples

Although the Kettleman North Dome, Montebello, and Wilmington fields are cited as present examples of waste, it is significant that waste at Kettleman North Dome and Wilmington is usually mentioned in the past tense in the memorandum. The records of waste presented are largely in agreement with those presented at the Los Angeles hearing and earlier in this statement, and the reasons given are almost identical with those given by the producers in the various fields. Thus with a general agreement on facts, the only thing lacking to prevent a recurrence of such conditions is an excellent statement of precisely how and how soon H. R. 7372, if enacted, would remedy the situation. A study of the examples given, indicate that the principal thing lacking has been a foresight as good as the hind sight that has become possible with time.

This point was aptly made by Mr. Cranson at the Los Angeles hearing when he said.

"We cannot employ ideas and equipment as yet unknown but we can always look backward and see the savings which could have been made by the use of modern methods."

Mr. Cranson further pointed out that the blow of gas at Kettleman North Dome has declined from 39.34 percent in 1930 during the early life of the field to 1.41 percent in 1939, while earlier in this statement the blow for November 1939 was listed at only 0.5 percent.

At this stage in the life of the Kettleman North Dome field, most of the producers probably wish that the field had been produced in the manner which the experience gained to date indicates would have been more efficient.

Most of the producers in Kettleman North Dome will agree on the basic causes of the waste as cited in the memorandum:

"The occurrence of waste is believed to result basically from the diversity of ownership and the differences in opinions of the various operators as to the proper methods of operating the field and the ever-present desire of each operator to recover all of the oil possible before the adjoining or adjacent operator recovers it; in other words, the rule of capture still prevails."

In order to visualize the great progress that has been made at Kettleman North Dome, it is only necessary to imagine the catastrophic results to the oil business of California and the Nation if Kettleman North Dome had been a townlot field in the Los Angeles basin. Although not perfect, Kettleman North Dome has a record so far superior to many other fields that a proverb attributed to Confucius is applicable. He said: "Destroy not the good while searching for the best."

Before commenting further upon the comparatively slight charges of gas waste in California oil fields, it may be well to again call attention to figures presented by Mr. Claude C. Brown, formerly of the California Railroad Commission and now with the Federal Power Commission, in his report on the Interstate Compact Commission. In section V of that report he shows that the total 400 billion cubic feet of gas produced in California in 1937 was considerably less than the 433 billion cubic feet wasted by the entire United States, and not only is California shown with only 8 percent of the national gas waste while producing 13.6 percent of the Nation's gas, but it is also shown that the 8.6 percent of the State's production blown to the air is far less than the percentage for any other important State. No invidious comparison is here made because conditions are more severe in some other States than in California, but progress toward perfection is a relative thing and is best expressed by comparison. As mentioned earlier in this statement, gas wastage in California amounted to only 6.9 percent of the production in 1939, so in the 2 years from 1937 to 1939 California not only maintained its national leadership in gas conservation but also increased its rating on the perfection score card from 91.4 percent in 1937 to 93.1 percent in 1939.

As regards the waste of gas at Wilmington and West Montebello, the United States Geological Survey memorandum truly remarks that, "These recurrent conditions are largely the result of intensive competitive drilling in town-lot areas."

The comment in the memorandum regarding the difficulties of enforcing the California gas-conservation law is also pertinent, indicating as it does that judicial delays and differences of opinion have the effect of postponing real remedial action on gas waste until most of the gas is dissipated and waste no longer occurs. The deliberate functioning of our courts may not be suited to the instantaneous action required to effectually stop gas waste, but it is doubtful if judicial procedure can be accelerated solely to stop the waste of gas.

At the Los Angeles hearing you heard Mr. E. B. Hall present a detailed statement in which he established that the Wilmington oil producers by voluntary effort had now substantially complied with all the antiwaste provisions of H. R. 7372. This statement was so complete that by reference it is made a part hereof and no further comment regarding Wilmington is necessary.

In regard to gas wastage at West Montebello, which is close to metropolitan Los Angeles, you were advised frankly and fully of conditions there by Mr. Robert H. Garrison, who pointed out that the relative insignificance of the field as a gas reserve had the effect of rendering impractical any great investment in pipe lines or equipment to fully utilize the gas now being blown to the air. Reference is made to Mr. Garrison's statement for further details of West Montebello.

In my opinion, the blowing of gas to the air will soon be eliminated by the field utilization of all dry gas not sold for commercial use. The returning of gas to formation for storage or for pressure maintenance will increase, but it is believed that the development of portable dehydrogenation plants for liquefying gas into chemical raw materials will offer an outlet for much gas now blown to the air. The burning of gas to make carbon black is prohibited in California, so some more valuable product to be made from natural gas in the field must be found, and chemical raw products may provide the answer.

By the very nature of things, progress in an industry must lag behind the discovery of improved practices. Not only does it require time to prove the new practice but it also requires time to educate producers to adopt the practice. However, the record of California in pioneering and leading in so many branches of the oil industry stands as a lasting guarantee that the oil producers of the State will voluntarily progress farther than they could if progress were forced upon them.

R. E. ALLEN.

FEBRUARY 17, 1940.

Mr. ALLEN. If there is any further information I can contribute, Mr. Chairman, I shall be more than happy to do so.

Mr. COLE. Mr. Allen, we are very glad to have had this additional statement from California. As you will recall, you were with the committee throughout its recent trip to California, at which time we received, one of the most interestng and helpful parts of the entire hearings.

There were two matters which developed somewhat in California during the hearings. I know that you can comment on each. One is as to your naval reserves in your State.

Admiral Stuart in his testimony at pages 443 and 444 of the hearings before the committee last November, stated:

> The geologists' figures indicate that the original recoverable content of petroleum from Government land in the reserve was estimated at approximately 600 million barrels, of which amount the production to June 30, 1939, has been 51,305,581 barrels, approximately 8.55 percent.

As to naval petroleum reserve No. 2 in Buena Vista hills the Admiral said that there was an excellent possibility of obtaining peak production from sands below the present oil horizons.

You were, as I remember, with the committee when we went through this area on a very foggy day. In California during the hearings there was some emphasis given to the fact that there were ample supplies available for the use of the Navy.

I would like to have your opinion on these two points, advanced by Admiral Stuart.

Mr. Allen. Briefly, Mr. Chairman, I concur in both of those statements. First, that there are, in all probability, great reserves lying in deeper sands on both naval reserve No. 1 and naval reserve No. 2.

As to the content of those sands, one could not be sure until they are drilled.

There is in the development of deeper California fields, a steady discovery of the fact that large gas deposits underlie the larger structures.

It is not improbable therefore that so far as the deeper sands are concerned——

Mr. Cole (interposing). That is what is commonly referred to as the gas cap?

Mr. Allen. Gas cap; yes, sir. It is not improbable therefore that there might be tremendous gas reserves under both naval reserve No. 1 and naval reserve No. 2, which gas would be of doubtful immediate use to the Navy unless by some of their newer dehydrogenation processes it is liquefied and becomes useful thereby.

As to reserves in the upper sands, there are of course substrata of the magnitude as indicated by Admiral Stuart.

The naval reserve No. 2, as you know, is largely under private operation at this time, which accounts for the substantial degree of depletion in the upper sands, whereas naval reserve No. 1, is still largely undeveloped. There is a possibility of prolific deeper oil and gas sands underlying both of those reserves, but which can only be discovered by the drill. That would be somewhat of an expensive proposition but one, however, to which any oil company would be put in the exploration for greater sources of supply.

Mr. Cole. One other point. In the recent hearings in California, Mr. Pemberton stated that important oil discoveries in California since 1934 have been on privately owned lands, and as a consequence of that, California oil which is beneath Federal-owned oil lands is considerably smaller. The estimate he gave the committee in 1934, is found at page 2811 of our hearings at that time.

It is not your understanding that the discoveries on the public lands during the past 22 years in the deeper sands at Kettleman Hills North Dome, and other fields are such as to increase the estimated oil reserves on Federal lands in California?

Mr. Allen. Very definitely, Mr. Chairman.

Mr. Cole. Was Mr. Pemberton wrong in that statement?

Mr. Allen. Mr. Pemberton, like so many of us, was perhaps influenced by many of the more recent discoveries such as on the floor of the San Joaquin Valley which are on private lands. He was probably referring to such fields as The Greely, Ten Section, Wasco, Rio Brano, Cole's Levee, Paloma, and Strand fields recently discovered on private land and apparently failed to consider the larger reserves which as you mentioned have been developed in Coalinga Nose which is approximately one-third of the Federal reserves, Kettleman Eocene, East Coalinga and other fields on Government land.

Mr. Cole. Mr. Pemberton told us in California that the Federally-owned land was much smaller, or using his exact language, less than one-third of the total in the State. That was what he told us in 1934. He was undoubtedly wrong?

Mr. Allen. I could not testify as to that example because as far as I know, no private agencies have recently made up any compilations. That undoubtedly was made up by the Geological Survey or the Bureau of Mines, but on page 23 of my main report, you will find a heading "Production From the Public Domain" which indicates to some great degree the magnitude of the present production from those reserves in California.

Mr. Cole. You say that the figures have not been made up?

Mr. Allen. I am not aware of the fact that they have been made up by private sources, Mr. Chairman.

Mr. Cole. Do you recall that the preliminary estimates of the United States Geological Survey placed the oil reserves on Federal lands in California, at the close of 1939, at 1,100,000,000, which is about one-third of the Oil and Gas Journal's current estimate of 3,447,622,000 barrels in California oil reserves?

Mr. Allen. I recall those figures, Mr. Chairman.

Mr. Cole. That is about one-third?

Mr. Allen. Yes, sir.

My comment on table VIII, Mr. Chairman, is possibly interesting. It reads:

> For many years past the Government-owned lands in California have produced each year more than twice the annual oil requirements of the United States Navy, although in 1918 amounting to only 8.8 percent of the State's production. All Government-owned lands in the entire United States are producing more than seven times the Navy needs.

Mr. Cole. Yes; another point is that of the interest of the Federa Government in your State is large, so that the Federal Government is concerned with what is done about petroleum in California, and its concern is justifiable.

Mr. Allen. By the very nature of the public domain owned by the Federal Government in California, that follows, because a large percentage of the Federal Government land is commonly known to be good for nothing but oil and it so happens that the Government has a lot of it.

Mr. Cole. Well, I am sorry that we cannot accept your invitation to return to California with you.

Mr. Allen. We hope that you will be able to come back in the very near future, Mr. Chairman.

Mr. Cole. Thank you.

Mr. ALLEN. On behalf of the California Oil and Gas Association I wish to thank you for the privilege and courtesy afforded me in appearing before this committee for that association.

STATEMENT OF ERNEST G. ROBINSON, PRODUCTION SUPERINTENDENT, SHELL OIL CO., ST. LOUIS, MO.

Mr. COLE. We will hear you, Mr. Robinson.

Mr. ROBINSON. Mr. Chairman, my name is Ernest G. Robinson. I am manager of the eastern production area, Shell Oil Co., Inc. I come here at the suggestion of the industry group, which has prepared the whole presentation. I have prepared a statement on conditions of petroleum production with respect to physical waste in Illinois, Indiana, Kentucky, Michigan, and Ohio; but to save the committee's time, if it please you, I will read only some paragraphs from it. The views I shall express are my own. The information I have used comes from the oil operators.

Mr. COLE. From where?

Mr. ROBINSON. From the oil operators.

I have also prepared an answer to the Interior Department's allegation of waste in Illinois. I have filed this with the committee.

Mr. COLE. Is that the supplement to this statement?

Mr. ROBINSON. Yes, sir.

Mr. COLE. Have you a copy of that?

Mr. ROBINSON. Yes, sir.

Mr. COLE. Mr. Robinson, before we proceed with further introduction of your remarks, will you state your experience?

Mr. ROBINSON. I have bachelor of science and master of arts degrees from Cornell University, major subject geology. During the period 1920–25 I worked in the northern Rocky Mountain States and the Province of Alberta. From 1925 to the present I have been an employee of Shell Oil Co., Inc. During this time I have worked in many States. Since October 1937 I have been manager, eastern production area. This area includes the Illinois basin. I am a member of the American Association of Petroleum Geologists and American Institute of Mining and Metallurgical Engineers.

The supplement to my statement deals with the allegation of waste by the Department of the Interior.

I want to state that all allegations as to waste in Illinois in the report of the Department of the Interior refer to physical waste of gas by burning in flares and to close spacing. The production of gas with oil in Illinois cannot be avoided. When there is no market for the gas, the burning of the gas is unavoidable waste.

Now, I will proceed to the main statement.

INTRODUCTION

This statement has been prepared in order to give the committee information on the conditions of petroleum production, with respect to physical waste, in Illinois, Indiana, Kentucky, Michigan, and Ohio. For the most part, this statement will be concerned with conditions in Illinois because its production and reserves are much greater than those of the other States of the region. The statement was written as of January 1, 1940. Since that date significant production has been developed from Devonian reservoirs. This production will be discussed separately.

The oil industry is vitally interested in the conservation of its raw material. The industry has supported State conservation laws and has attempted to practice conservation in the absence of such laws. In Illinois the industry is now supporting a movement looking to the enactment of a State conservation law, and it is probable that the State will have such a law in the not-distant future.

It is my opinion that the great majority of responsible operators in Illinois is in favor of a State conservation law. It is apparent to me that a good law would result in the elimination of many present inequities as between operators and would promote wider adoption of sound engineering principles leading toward greater conservation.

The refusal of a small minority, or even of one operator, to follow sound practices voluntarily makes it impossible to put into effect the constructive plans of the majority. Without a law, the unrestricted rule of capture is still operative. With a State law it is possible to require operators to conform to accepted efficient practices.

The oil reserves of the Nation lie in 23 States. One State has more than 50 percent of the reserves, 9 have amounts varying between 19 and 1 percent of the Nation as a whole, 8 have less than 1 percent each, and 5 have negligible amounts. In considering the oil industry from a national viewpoint, it would seem advisable to keep in mind the relative importance of the States. Table I shows United States reserves as of January 1, 1939,[1] by States, the percentage of reserves in each State, and the reserves in each State in terms of the total United States production during 1939.[2] I have also estimated the reserves of Illinois, Michigan, Indiana, Kentucky, and Ohio as of January 1, 1940, which estimate, appearing at the bottom of table I, indicates that during 1939 the reserves of these 5 States were increased from approximately 355,000,000 to about 540,000,000 barrels. This is only 3.1 percent of the United States reserves.

The Illinois Basin (eastern interior coal basin) includes southern Illinois, southwestern Indiana, and northwestern Kentucky. Enclosure I is a map published as a supplement to the October 26, 1939, issue of the Oil and Gas Journal.[3] The map shows the oil fields and pipe lines of the Illinois Basin.

ILLINOIS

Illinois has been receiving a great deal of attention during the last 2 years. Because of the shallow depths at which oil is found, it soon became apparent that large flush production would come from this area, necessitating serious readjustments of the supply and demand factors involving a number of other oil-producing States.

During a short period of time, Illinois has increased its production from a negligible amount to about 350,000 barrels per day. That was as of the first of the year. Production at present is a little over 400,000 barrels per day. This increase of production has been possible because of its proximity to large refining and consuming centers, and the absence of a State law under which production can be equitably controlled.

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[1] American Petroleum Institute Quarterly, vol. 9, No. 2, pp. 7-8, April 1939; and petroleum investigation hearing before a subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 76th Cong., on H. Res. 290 and H. R. 7372, November 6, 7, 8, and 10, 1939, at Washington, D. C., p. 102.

[2] Oil and Gas Journal, January 25, 1940, p. 53.

[3] Oil and Gas Journal, October 26, 1939, Illinois Basin map.

In comparison with most other important oil States, the amount of current production from Illinois is out of proportion to its reserves. It is obvious that if current rates of production are maintained, the proven reserves of Illinois will be depleted at a relatively early date unless substantial new reserves are discovered.

My estimate of Illinois reserves on January 1, 1940, was 430,000,000 barrels of oil, an increase of about 187,000,000 barrels over the estimate of the previous year.

Mr. Cole. May I interrupt you at that point? You say 430,000,000 barrels?

Mr. Robinson. 430,000,000 barrels.

Mr. Cole. Have we not received a figure of 600,000,000 from some source since January 1.

Mr. Robinson. The Oil and Gas Journal and Oil Weekly have both published a figure of more than 600,000,000. Our estimates have been very carefully made, and I think we will stand on it. That is, I think the figures of the Oil Weekly and Oil and Gas Journal are far too high.

Mr. Cole. That is the 600,000,000?

Mr. Robinson. Yes.

At the 430,000,000-barrel figure this reserve is about 2½ percent of the reserves of the United States as of January 1, 1939. Of this amount 396,050,000 barrels, constituting about 2¼ percent of the national reserve, are located in the new fields discovered since the first part of 1937, and 33,950,000 barrels are in the old stripper fields. The old fields produce for the most part from wells making less than 1 barrel of oil per well per day. It is improbable that there is any avoidable waste in the production of the stripper fields; consequently, they will be disregarded for the present and consideration given only to the present reserve of approximately 396,000,000 barrels of oil discovered since the first of 1937 (table II).

The estimated production of petroleum in the United States for 1939 was 1,255,783,000 barrels of oil.[2] This is equivalent to 104,648,600 barrels of oil per month. The total reserves of the United States, estimated as of January 1, 1939 [1] are 13.8 times the 1939 production of the United States.[2] The reserves in the new Illinois fields are the equivalent of about 3¾ months' supply for the Nation on the basis of 1939 production. The stripper fields of Illinois would contribute about an additional one-third month's supply.

On January 1, 1940, the estimated reserve of the Louden field in Fayette County was 135,000,000 barrels. The Salem field in Marion County had a reserve on that date of 195,000,000 barrels, so that these two new fields, Louden and Salem, comprise 330,000,000 barrels or 83.3 percent of the total reserve of Illinois, discovered since January 1, 1937. Therefore, it will hardly be necessary to discuss the other newly discovered field individually.

WASTE

The opinion is widely held that, because of the high rate of production in the absence of a State conservation law, present practices are resulting in substantial, serious surface and subsurface waste.

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[1] American Petroleum Institute Quarterly, vol. 9, No. 2, pp. 7–8, April 1939; and petroleum investigation hearing before a subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 76th Cong., on H. Res. 290 and H. R 7372, November 6, 7, 8, and 10, 1939, at Washington, D. C., p. 102.

[2] Oil and Gas Journal, January 25, 1940, p. 53.

I do not believe that an examination of the facts will substantiate this broad conclusion. The following paragraphs present my views as to waste in this area:

1. SPACING AND LOCATION

The problem of the most economical well spacing in an oil field is one of the most complicated in the oil industry. Obviously it is the goal of the industry to obtain the maximum quantity of oil from the reservoirs compatible with a reasonable profit on the investment. It does not necessarily follow that in a field developed to a given density and which will yield appreciable profits, the number of wells should be increased. As a general statement it may be said that additional investment in wells is not warranted unless the ultimate production of the field is increased sufficiently to make such investment profitable.

Spacing of the wells in a reservoir is, to a large degree, governed by the nature of the forces propelling oil to the bore hole. These forces permit the segregation of reservoirs into three types:

1. Water drive reservoirs in which the energy is supplied by the pressure of the water in the same bed. This supply is usually considered to be inexhaustible.
2. Gas expansion reservoirs (depletion type reservoirs) in which the energy originates from the expansion of the gas dissolved in the oil supplemented in some cases by gas present in a gas cap. The total amount of energy is limited.
3. Intermediate types which are combinations of the first two types.

In my opinion the major portion of the reserves of Illinois is contained in reservoirs of the second type.

Because of the larger supply of energy available per barrel of oil, it is evident that, in general, water-drive fields can be developed with wider spacing than gas expansion fields, where the energy per barrel of oil is of necessity limited. Spacing is also influenced by the accessibility of the field, the costs of drilling, and the characteristics of the reservoir, such as porosity and permeability of the beds, and depth and thickness of the producing rock. Furthermore, the amount of gas in solution in the oil, the gravity and viscosity of the oil, and the pressure in the reservoir also should be taken into consideration in selecting a spacing plan. The numerous factors controlling the spacing pattern, which will yield the maximum economic recovery from a field, constitute a problem for which no universally applicable rules or regulations can be promulgated. Moreover, the problem is complicated by lease boundaries, as every property owner is entitled to enjoy the good of his property. The problem is best solved for each field individually by those having complete knowledge of all the pertinent information in the particular field.

The spacing pattern in the new fields in Illinois is one well to 10 acres; however, there are exceptions to this rule. There has been town-lot drilling in the city of Centralia and the towns of Keensburg, Noble, Mill Shoals, and Patoka, which field is drilled on a 5-acre spacing pattern outside the town site. The northern part of Louden field is drilled on a 20-acre pattern in the area of high-pressure repressuring, also some of the new fields in the eastern part of the State have been drilled on a 20-acre pattern, and parts of the Salem field have been drilled on a 20-acre pattern in the McClosky Reservoir. The Dix field has also been drilled to a 20-acre density.

The following details are given on the well spacing in Salem and Louden fields because these fields contain about 83 percent of the newly discovered reserves of Illinois.

The producing area of the Salem field covers 8,870 acres of land. Until recently the production has been from three beds, namely, the Benoist, the Aux Vases, and the McClosky; recent development has disclosed oil in the St. Louis limestone and the Denovian dolomite. Enclosure II is a map of the Salem field, showing the area from which Benoist oil is being produced. The map shows that 942 Benoist oil wells have been drilled in this field. This number includes all the wells producing from the Benoist sand. The cross hatched part of the map shows the area drilled on a spacing plan closer than one well to 10 acres. The closely spaced area is 1,210 acres or 13.7 percent of the area of the field. On this 1,210 acres, 370 Benoist wells have been drilled, that is, the average spacing is 3.2 acres. The closely spaced wells were drilled to a considerable extent because of obligations on leases adjacent to church and school lots and vacancy strips. The unhatched or white portion of the producing area shown on the map is being developed on a 10-acre plan. This includes 7,660 acres or 86.3 percent of the producing area.

Enclosures III and IV are also maps of the Salem field. They show the productive limits and the well spacing in the Aux Vases sandstone and McClosky limestone, respectively. These maps reveal that 94.5 percent of the Aux Vases producing area and 90.2 percent of the McClosky producing area have been regularly developed with 10-acre spacing, except that in a part of the area McClosky development has been on 20-acre spacing. Only 5.5 percent of the Aux Vases and 9.8 percent of the McClosky has been spaced closer than one well to ten acres. The average spacing of the closer spaced wells is 3.4 acres per well in the Aux Vases and 3.2 acres per well in the McClosky.

The proven area in the Louden field consists of 19,600 acres. As shown on enclosures V and VI, the well spacing has been varied. In the northern part of the field, 4,000 acres undergoing high pressure repressuring have been drilled on the plan of one well to 20 acres. The general pattern for the remainder of the field is one well to 10 acres, except for 1,080 acres on which 249 wells have been drilled (density 4.3 acres per well). Approximately 94 percent of the field, 18,500 acres, has been properly developed according to the best known engineering methods.

The new fields of Illinois have a total area of 66,335 acres, of which 62,425 acres, or 94 percent, have been developed on a spacing pattern of 10 acres or more per well and the remaining 3,910 acres, or 6 percent, have been drilled on a closer spacing pattern. Taking into account the characteristics of the different reservoirs, it is my opinion that the Illinois fields are being developed to a drilling density ample to insure the most efficient use of the reservoir energy, resulting in the recovery of the maximum amount of oil. In some local areas there has been dense drilling because of small leases. Without a State law requiring ratable takings related to a spacing factor, these densely spaced tracts tend to create low pressure areas in the reservoir, resulting in nonuniform movement of oil and gas in the reservoir and consequent inefficient use of energy. Close spacing carried to an extreme invariably results in economic waste.

2. SURFACE WASTE OF OIL AND GAS

Crude oil at the surface may be lost by evaporation or leakage. Losses may occur from poor tankage or gathering lines or from storage in earthen pits. Oil may be wasted by burning, by accident, or by intent. There is unavoidably some evaporation and loss of crude oil in transporting it from its reservoir in the ground to the refinery. Some steel storage of oil above the ground is necessary in order that refineries may operate without interruption and the country may be continuously supplied with refined products.

Steel tanks with pressure valves are in use in the new fields in Illinois. In a few places wooden tanks are used for gun barrels to separate oil and water. The gas separators in common use are of the latest design. Treating equipment to reduce cut oil to pipe-line requirements is used wherever necessary. No oil is being stored in earthen pits. The loss of oil by evaporation, exposure, or wasteful burning in Illinois is at a minimum.

In almost every case all reasonable precautions are being taken to prevent fires. No fires of consequence have occurred in the Illinois oil fields since the beginning of the new development in the first part of 1937.

Natural gas may be used for lifting of oil from the producing bed to the surface either by natural flow or by gas lift, for repressuring of oil sands, as a carrier of natural gasoline, for the manufacture of carbon black, or for fuel in homes or industrial plants.

Originally all of the gas was dissolved in the oil and the two were present in the reservoir as one fluid. No free gas pockets were ever found in the Salem field. Since this is a gas-expansion type reservoir, it is necessary that gas be produced with the oil.

Gas unlike oil, cannot be stored economically above ground while awaiting a market. If gas is not present in sufficient quantities to justify the construction of a pipe line to a market or the erection of a natural gasoline plant or a carbon black plant, and if no other practical use is available, it is necessary that the gas be vented to the air or burned.

The disposition of the natural gas produced with the oil is entirely a matter of economics. After natural gas has lifted the oil to the surface it is much more likely to be further utilized if the rate of oil production is controlled in such way as to insure a steady supply of gas over a long term. Under present conditions in the Salem field the estimated long-term reserve of natural gas is insufficient to attract capital for the purpose of installing gathering, transmission, and distribution lines. An engineering estimate was made to determine whether an investment in gathering and transmission lines for the gas from the Salem field was sound. It was concluded that the project could not be undertaken under present conditions.

A combination gasoline extraction and repressuring plant is in operation in the Salem field. The plant processes 17,000,000 cubic feet of gas per day. After the gasoline has been extracted, 1,000,000 cubic feet of the gas are returned to the oil-producing sand for repressuring purposes. Approximately 50 wells were being drilled in the Salem field on January 1, 1940. Each drilling rig uses approximately 200,000 cubic feet of gas per day, or a total of 10,000,000 cubic feet of gas for the 50 drilling wells. These drilling wells, together with the gasoline plant, account for a use of about 27,000,000 cubic feet of gas a day.

Now, this all occurred before the beginning of the intensive Devonian development.

Mr. COLE. At the time we were in Illinois, they had one well in the Devonian sand, as I recall.

Mr. ROBINSON. That was in the Salem field.

Mr. COLE. Just one.

Mr. ROBINSON. Yes, sir.

Mr. COLE. One well.

Mr. ROBINSON. Yes, sir.

Mr. COLE. The number has since increased?

Mr. ROBINSON. That has since been expanded.

At the present time—January 1, 1940—the Salem field is producing about 185,000 barrels of oil per day, with an average gas oil ratio of 470 cubic feet per barrel. This amounts to an estimated production of 87,000,000 cubic feet of gas per day, of which amount 27,000,000 cubic feet are being utilized.

Thus far no operator has been able to justify the construction of another gasoline plant in the Salem field. At least five surveys have been made for the purpose of determining whether another gasoline extraction plant could be profitably erected, but no construction work has yet been started.

The Louden field is the site of an important gas injection project. Essentially, this amounts to high-pressure repressuring—or early life repressuring—as contrasted with the common method of gas-driving a nearly depleted field by low pressure gas injection. The principal objectives of the Louden project are to supplement natural energy in order to drive oil to the producing wells while it remains in its most fluid state, and to conserve the gas and extract the gasoline. As each reservoir has its own peculiarities, it is desirable that tests be made before a repressuring project be undertaken on a large scale. A pilot plant and system were built in the north part of the Louden field during the latter part of 1938 to gather gas from 640 acres, extract the gasoline, and boost the residue to the 750-pound pressure needed for return to the reservoir. The test plant was successful. The plant was enlarged and by December 1939 it had a capacity of 10,000,000 cubic feet of gas per day. Gas is now being injected into 4,000 acres through 46 input wells drilled for that purpose. The project is being extended in area as development progresses. Approximately $1,000,000 has already been invested in this system for the purpose of increasing the recovery of oil and natural gasoline from this field. Of course, these repressuring operations are being carried on in order to obtain a larger profit than could be anticipated with usual primary production methods.

The gas flares in some Illinois fields are burning gas necessarily produced with the oil from these gas expansion type reservoirs. If the gas were not produced, it would be impossible to produce the oil. The gas has done its work when it has propelled or helped propel the oil from the reservoir to the surface. Despite this, the burning of the gas is physical waste.

There has been no significant sale of any gas from any of the new Illinois oil fields because the rate at which the gas has been produced will exhaust most of the available supply in a short time. Since the rate of oil production determines the rate of gas production, decreasing the rate of oil production would lengthen the time during which substantial amounts of gas could be produced from the reservoirs. This might make attractive an investment in facilities for further utilizing the gas and recovering the natural gas line.

Furthermore, a slower rate of production would most likely make feasible the return of a large percentage of the gas produced to the reservoirs. This would benefit ultimate recoveries. This will be discussed later in this statement.

The gas-oil ratios in the Louden and Salem fields as of January 1, 1940 are 420 and 470 cubic feet per barrell of oil respectively. At a gasoline content of approximately 1.5 gallon per 1,000 cubic feet, the loss of gasoline is calculated as follows:

445 (average ratio)×1.5 (gallons per 1,000 cubic feet)=0.67 gallons per barrel, the equivalent of 1.6 percent of the volume of crude from which the gas is not processed.

The Storms field, which is in an early stage of development, is different from most of the Illinois fields in that it has a large gas cap. At the first of the year 18 wells had been completed in the Waltersburg and with an average initial production of 360 barrels of oil and 9,000,000 cubic feet of gas per day. The average gas-oil ratio was 25,000 cubic feet per barrel. Because of the difficulty of finding a market only a small amount of oil was being produced as of the first of the year.

Development since the first of the year has increased the number of wells in Storms to 43, with a daily oil production of about 2,300 barrels. The amount of gas being burned has increased to an estimated 150,000,000 cubic feet per day. The natural gasoline content of this gas is very low. This indicates that the gas of the gas cap is being produced and burned. This practice will in addition to wasting the gas cause underground physical waste of oil.

The operators are attempting to remedy the underground waste situation by cementing casing below the gas producing part of the sand.

Negotiations are under way looking to the sale of the gas from the Storms field. If these negotiations result in a sale of gas the surface gas waste at Storms may be considerably reduced.

The difficulties encountered in this field demonstrate how hard it is to determine the best method of developing a newly discovered field until experience is obtained from a number of wells.

3. SUBSURFACE WASTE OF OIL AND GAS

A. DRILLING AND COMPLETION

The improper management of a well during the drilling and completion stages may cause serious injury to the oil or gas reservoir by permitting water to flood the oil and gas sand, by permitting the escape of the contents of a reservoir to another permeable bed from which it may not be recovered, and by mudding off the oil- and gas-bearing bed during the completion operations.

A faulty casing plan might permit oil, gas, or both to migrate from a productive bed into another bed from which recovery would not be practicable. In the same way water may migrate from one permeable bed to another containing oil and gas unless each permeable bed or reservoir is mudded, cemented, or cased off. Improper abandonment of a depleted well or a dry hole might permit water flooding of an oil reservoir. Injury due to any of these causes will result in the inefficient use of reservoir energy.

The operators, as a matter of good business, are interested in preventing the loss of oil from a productive formation by drainage, seepage, or uncontrolled migration. The drilling and completing of oil wells in the new fields of Illinois has been done by the latest methods by technologists who have gained their experience in other areas. These men, approximately 100 in number, are charged with the responsibility of drilling, completing, and operating the oil wells in a manner to present waste of reservoir energy and recover the greatest amount of oil that can be economically produced.

Illinois does not have a general conservation statute, but it has statutes regulating the drilling and abandonment of wells drilled for oil or gas. These laws contain provisions for the protection of the oil-bearing beds and the coal layers during drilling and abandonment operations. Abandonment operations are supervised by a State inspector or other person representing the State department of mines and minerals.

The avoidable waste resulting from the drilling and completion methods used in the Illinois fields is negligible.

B. UTILIZATION OF RESERVOIR ENERGY

It is my opinion that in the Illinois fields the reservoir energy causing the movement of fluid into the wells originates mainly from the expansion of gas in solution in the oil and to a much lesser extent from natural water drive, gravity, or a combination of these factors.

In the Salem and Louden fields, no water is produced with the oil except around the edges of the fields and it seems likely that in these fields too, the reservoir energy originates mainly from gas expansion. Many wells in these fields have been produced at a high rate so that the presence of a slow water drive, if it exists, could not in any case have been detected, for instance, by measurements of bottom-hole pressure. However, a water drive to be effective must be such as to correspond to a reasonable rate of production for the field and what little evidence there is available on this subject indicates that there is no effective water drive in this sense in these fields. In any case the lack of evidence of water drive indicates that little of the oil is being bypassed or trapped by water.

In the Illinois fields gas production is not much in excess of the estimated amount of gas dissolved in the oil indicating a high degree of efficiency in the use of this energy. The prevailing ratios of 400 to 500 cubic feet per barrel are not considered inefficient and compare favorably with those in other important producing areas. In the fields under discussion restriction of the rate of production does not necessarily result in lower gas-oil ratios. However, it must be pointed out that a slower rate of production might permit the installation of facilities adequate to return to the reservoir a larger portion of the gas now being vented or burned. Such a procedure increases the amount of energy available to propel oil and consequently results in a greater ultimate recovery.

ILLINOIS SUMMARY

The preceding discussion on the production practices in Illinois suggests the following summary. This summary covers all new producing fields with the exception of the recently discovered Devonian pools which are discussed separately later.

1. More than 90 percent of the area of the new fields in Illinois has been developed on a reasonable well-spacing program. In the closely spaced areas, economic waste is clearly indicated and probably also some physical waste.
2. There is no avoidable surface waste of oil.
3. There is a waste of natural gasoline because not all of the natural gas being produced is being processed. This loss amounts to 1.6 percent of the volume of the oil from which this nonprocessed gas comes.
4. The waste of gas through venting to the air or burning is considerable. This can only be prevented by materially reducing the rate of oil production as the present gas-oil ratio is efficient. Commercial utilization of the gas under the present circumstances is not feasible. However, a reduced rate of oil production would permit processing and returning a larger proportion of the gas now being wasted to the reservoir, resulting in greater ultimate yield.
5. Drilling and completion methods are efficient and in accordance with modern practice.
6. The limited amount of data available at this time indicates that the majority of the Illinois reserves are contained in reservoirs which have neither an effective water drive nor a substantial gas cap. The reservoir energy is contained in the gas dissolved in the oil. The prevailing low gas-oil ratios indicate essentially the efficient use of this energy.
7. The short production history of the new Illinois fields makes it difficult to evaluate the results of present production methods, from the point of view of avoidable waste. At best, waste is a relative thing and its quantitative evaluation is strictly a matter of opinion. It is the opinion of some competent engineers that low reservoir withdrawals might demonstrate a slow movement of water which could be utilized as an expulsive agent. If this thesis is correct, continuation of present methods will result in a lowering of ultimate recoveries. However, my best interpretation of data now available indicates that present methods are utilizing reservoir energy efficiently. A State conservation law under which lower rates of production could be established is highly desirable in Illinois because waste of gas and natural gasoline is admittedly large and could be reduced if the rate of its production were properly controlled to give a steady long term supply. The history of conservation in other States suggests that an enlightened public opinion will soon demand the enactment of suitable conservation legislation.

INDIANA

The estimated petroleum reserves as of January 1, 1940, in the State of Indiana amount to 15,000,000 barrels of oil (table 1), sufficient to supply the Nation for 4½ days. Most of the production in Indiana is in the southwestern part of the State. Indiana has a large number of stripper wells. The recent development in Indiana has been carried on by the same methods used in Illinois. The reserves are so small that a prolonged discussion of conditions in Indiana would not be justified.

KENTUCKY

The reserves in Kentucky as of January 1, 1940, were 25,000,000 barrels of oil (table I), equivalent to 7½ days' production of the United States on the basis of the 1939 rate of production. Kentucky has fourteen one-hundredths of 1 percent of the total reserves of the United States. Kentucky has a large number of stripper wells producing a barrel or less of oil a day. These wells may be disregarded insofar as the question of conservation is concerned, since it is necessary that they be permitted to produce to capacity if they are to be produced economically. The new fields in western Kentucky are small, the largest covering approximately 1,200 acres. There is very little gas with the oil, reservoir pressures are low, and very few wells flow initially.

In the majority of fields no water is encountered. In a few fields edge water is present. Practically no edge-water encroachment has been noted.

Since these fields are shallow, have limited oil reserve, have little or no water encroachment, and very little gas is present with the oil, secondary recovery methods, mostly gas and air drive, are extensively applied, in order to keep the production rates above the economic limit.

MICHIGAN

Michigan has 65 separate fields which produce or have produced oil in commercial quantities. The estimated reserve as of January 1, 1940, is 50,000,000 barrels of oil (table 1), or twenty-nine one-hundredths of 1 percent of the total reserve of the United States. If all of the petroleum reserve in the State of Michigan were produced at one time, it would only satisfy the demand of this Nation for a period of 14½ days.

Michigan has a comprehensive conservation statute. This law is being enforced. Under the present Michigan act, the supervisor has the authority to prevent waste, as defined in the act.

Drilling in Michigan for the most part, has been with cable tools or combination rotary and cable tools. The productive area of the State is almost all covered by glacial drift. The current practice is to drill through the drift with rotary tools, setting a protective string of casing at a depth sufficient to protect the fresh water supplies and to prevent the hole from caving. In most instances, the casing is cemented. From the bottom of this string of pipe the hole is usually drilled to the top of the producing bed with cable tools. A production string of casing is then run and the well drilled into the pay formation with cable tools.

All fresh water and brines are protected by casing properly sealed to avoid intercommunication between permeable beds. Any producing beds penetrated and not produced are properly protected. All wells are tubed upon completion and are produced through tubing. Many of the oil pools in Michigan have a natural water drive, and proper care is taken to avoid drilling into bottom water. If water is accidently encountered, it is plugged off. No free gas caps have been encountered in Michigan. Such gas as is produced along with the oil is gas in solution liberated due to decrease in pressure. Production rates in Michigan are maintained at a proper level to insure the greatest flowing efficiency and the greatest utilization of reservoir energy. When wells cease to flow, they are placed on the pump. It was in Michigan that acid treatment of limestone formation was first successfully practiced. This has probably done more than any other one thing to increase the ultimate yield from limestone formations.

In those fields where gas is present in sufficient quantities to justify the expenditure, gasoline extraction plants have been installed for the purpose of processing the casing-head gas produced with the oil. Residue gas from these plants is used for producing operations and in many cases is disposed of to industrial and domestic consumers. Gas injection projects have been undertaken in Michigan but without a great deal of success, due to the character of the producing bed. There is very little usable gas released to the atmosphere.

OHIO

The estimated petroleum reserves in Ohio as of January 1, 1940, were 22,000,000 barrels of oil (table I), sufficient to supply the Nation 6½ days on the basis of the 1939 rate of production. Ohio has thirteen one-hundredths of 1 percent of the total reserves of the United States. Ohio has over 24,000 stripper wells which produce approximately one-third of a barrel of oil per well per day. Gas and air drive have been used extensively in the shallow Ohio fields in order to keep the production rates above the economic limit.

There is very little gas with the oil in the Ohio fields, reservoir pressures are low, and there is little or no water encroachment.

Insofar as the question of conservation is concerned, the stripper wells of Ohio may be disregarded, since there is no physical waste.

TABLE I.—*United States petroleum reserves by States*

State	Crude oil reserves [1] (thousands of barrels)	Percent of total reserves	Supply for United States based on 1939 production [2] (in years)	Remarks
Texas	9,447,764	54.46	7.52	
California	3,188,763	18.38	2.54	
Oklahoma	1,162,370	6.70	.93	
Louisiana	1,040,256	6.00	.83	
New Mexico	703,252	4.05	.56	
Kansas	613,230	3.53	.49	
Wyoming	261,133	1.51	.21	
Illinois	242,847	1.40	.19	35,000,000 stripper.
Pennsylvania	200,460	1.16	.16	Stripper.
Arkansas	188,246	1.09	.15	
Montana	104,471	.60	.08	
Michigan	42,749	.25	.03	
New York	40,490	.23	.03	Stripper.
Kentucky	37,545	.22	.03	23,000,000 stripper.
Ohio	26,358	.15	.02	Stripper.
West Virginia	24,468	.14	.02	Stripper.
Colorado	17,713	.10	.01	
Indiana	6,031	.03	.01	Stripper.
Mississippi	Negligible			
Missouri	Negligible			
Nebraska	Negligible			
Tennessee	Negligible			
Utah	Negligible			
Total	17,348,146	100.00	13.81	

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[1] American Petroleum Institute Quarterly, vol. 9, No. 2, pp. 7-8, April 1939, and Petroleum Investigation—Hearing before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, November 1939, p. 102.

[2] Oil and Gas Journal, Jan. 26, 1940, p. 53. 1939 production equals 1,255,783,000 barrels.

Reserves of Illinois, Indiana, Kentucky, Michigan, and Ohio estimated as of January 1, 1940, by E. G. Robinson are as follows:

	Barrels	Percent
Illinois reserves as of Jan. 1, 1940, total United States reserve	430,000,000	2.48
Indiana reserves as of Jan. 1, 1940, total United States reserves	15,000,000	.09
Kentucky reserves as of Jan. 1, 1940, of total United States reserve	25,000,000	.14
Michigan reserves as of Jan. 1, 1940, of total United States reserve	50,000,000	.29
Ohio reserves as of Jan. 1, 1940	22,000,000	.13
Total 5 States here considered	542,000,000	3.13

TABLE II.—*Estimated petroleum reserves in Illinois fields discovered since Jan. 1, 1937*

Field	Estimated reserves Jan. 1, 1940 (in barrels)	Field	Estimated reserves Jan. 1, 1940 (in barrels)
Aden and N. Aden	2,000,000	Leech	700,000
Barnhill	2,700,000	Louden	135,000,000
Boyleston	900,000	Mill Shoals	700,000
Centralia	9,000,000	New Harmony	1,300,000
Cisne	1,800,000	Noble	2,300,000
Clay City	11,000,000	North Boble	3,300,000
Cordes	2,000,000	Olney	600,000
Cowling	250,000	Patoka	1,400,000
Cravat	300,000	Roaches	350,000
Dix	3,000,000	St. James	5,000,000
Dubois	175,000	Salem	195,000,000
Dundas	2,700,000	Sandoval (New)	700,000
East Flora	15,000	Schnell	75,000
Enterprise	4,000,000	Stokes	300,000
Fairman	1,000,000	Storms	1,500,000
Flora	185,000	Tonti	1,000,000
Grayville	250,000	Miscellaneous	500,000
Griffin	3,500,000		
Keensburg	1,500,000	Total	396,050,000

SUPPLEMENTAL STATEMENT OF DEVONIAN PRODUCTION IN ILLINOIS

There has been a small amount of Devonian production in the Illinois basin for several years. However, this supplement is concerned with the new Devonian production at Bartelso, Sandoval, Centralia, and particularly Salem.

The first important recent Devonian discovery was in the Sandoval field in January 1939. The first well had an initial production of about 500 barrels of oil per day. Activity lagged until midsummer, 1939, when several wells were completed. To date (February 4, 1940) 22 wells have been completed, although the central part of the field is as yet undeveloped. Water encroached quite rapidly and at the present time the existing wells, which are located around the edge of the field, are producing appreciable amounts of water. The data show that a strong water drive is present in this reservoir, which has made itself evident in a very short time. The total proven area is estimated to be 450 acres, approximately one-half of which is producing. The recovery to date is about 750,000 barrels of oil.

Devonian production was discovered in the Salem field in November 1939, by a well having an initial production of 3,500 barrels per day. Drilling activity increased rapidly and at the present time there are 34 producing wells and 113 active operations. It is estimated that the Devonian Reservoir will cover approximately 6,000 acres. The 34 producing wells had an average initial production of 4,300 barrels per day, have produced about 2,000,000 barrels to date, and are now producing an average of 2,200 barrels per well per day. The average gas-oil ratio at present is approximately 1,600 cubic feet per barrel as compared to an initial gas-oil ratio of 600 to 800 cubic feet per barrel. Based on an average gas-oil ratio of 1,600 cubic feet per barrel the total gas production is about 120,000,000 cubic feet per day.

The Devonian limestone was found productive in the Bartelso field in December 1939, by a completion with an initial production of 160 barrels per day. A second well completed in January 1940, flowed 1,040 barrels in 24 hours. One additional well is drilling. The productive area may cover 300 acres.

Devonian production was discovered in the Centralia field in December 1939. Initial production of the discovery well was 800 barrels of oil per day. This well is located in the Townsite area and immediately precipitated competitive drilling activity. Six additional wells have been completed nearby with an average initial production of 470 barrels per day. Drilling operations are in progress at 22 additional locations.

Illinois has had important Devonian production for only 2 months. Consequently not enough time has elapsed or sufficient data accumulated to allow a statement as to the nature of the two important reservoirs, Salem and Centralia. At the present rate of production there is a very considerable surface waste of gas and contained gasoline. Most of this waste is in Salem. The volume of the natural gasoline waste in this field is estimated at 3 percent of the volume of Devonian oil produced. A reduced rate of oil production would improve the possibilities of economic use of both gas and natural gasoline. An active water drive has already been demonstrated at Sandoval. This immediately suggests the likelihood of the existence of similar conditions at Salem; although no evidence on this has yet appeared. The local areas of dense drilling, irregular development, and high rates of flow in the Devonian at Salem if combined with an active water drive will undoubtedly lead to irregular water encroachment and consequent trapping of oil by water on the flanks of the structure. This would increase somewhat the estimated waste.

(The supplemental statement and charts filed by Mr. Ernest G. Robinson is as follows:)

SUPPLEMENT TO STATEMENT BY ERNEST G. ROBINSON PRESENTING ANALYSIS OF AND ANSWER TO REPORTS FILED WITH COLE SUBCOMMITTEE ON FEBRUARY 8, 1940, BY DEPARTMENT OF THE INTERIOR ALLEGING PHYSICAL WASTE IN ILLINOIS, INDIANA, KENTUCKY, MICHIGAN, AND OHIO

On pages 23–26 of exhibit B of the publication listed above, allegations are given of physical waste of natural gas in Illinois by blowing to the air. The allegations cover 10 fields. These will be discussed in the same order.

Clay City field.—In Clay City field the greater part of the gas produced with the oil is used as fuel for lease operations. The remainder is burned or vented to the air. The oil cannot be produced without producing gas, and there is no market for the gas.

Centralia field.—The statement is made that one city block contains nine producing wells. This city block is part of the densely drilled townsite area. The dense drilling has undoubtedly caused considerable economic waste, since many more wells have been drilled than could have been justified by the amount of additional oil thus recovered. However, on account of the nature of the reservoir, which is of the gas-expansion type, it is felt that little underground waste has occurred except that caused by nonuniform withdrawals.

Louden-Beecher City field.—Louden field is producing an estimated 30,000,000 cubic feet of gas per day. Of this 9,000,000 cubic feet is gathered and processed in the gasoline plant, 3,000,000 cubic feet is used in lease operations and 18,000,000 cubic feet is vented or burned. The production of gas with the oil cannot be avoided. There is no market for the gas now being burned, but negotiations are now under way for the sale of 5,000,000 cubic feet of gas.

Patoka field.—The specific allegations of physical waste in this field are restricted to the statement that the field contains 104 wells, more than 40 of which are located in one-quarter section of land. The implication is that physical waste has been caused by the field having been drilled irregularly and too many wells having been drilled in the field as a whole.

The field has a total productive area of 550 acres. This indicates that in the one-quarter section of land the density is less than 4 acres per well as compared to 5.5 acres per well average for the field.

The reservoir is of the gas-expansion type and under the conditions in this field, I am of the opinion that the dense drilling cannot be charged with reduction in ultimate recovery. It seems probable that economic waste has occurred. I doubt whether the wells drilled beyond those required to develop the field on a 10-acre space pattern have increased the ultimate production of the field as a whole sufficiently to defray their development cost.

Salem-Lake Centralia field.—It is pointed out that much gas is being burned in Salem and that close drilling occurs in the small tracts.

My statement brings out the fact that the total gas production of the field can be estimated at about 200,000,000 cubic feet per day. Of this amount 17,000,000 cubic feet is being processed and about 20,000,000 is being used for drilling and other lease purposes. The remainder is being vented or burned. At the present rate of production, the gas supply will be depeleted in too short a time to warrant the necessary large investment in processing or transportation facilities.

The dense drilling in small local areas in this field has been fully discussed in the statement.

Sandoval field.—It is pointed out that there were several gas flares in this field in November 1939. These flares were burning gas from the Devonian Reservoir. The gas was in solution in the oil and it was necessary to produce the gas to get the oil. The present daily production of Sandoval is 3,000 barrels of oil. The gas ratio is 350 cubic feet per barrel. That is, the gas production from the 22 Devonian wells in this field is about 1,000,000 cubic feet per day. This rate of gas production is so small that no investment in facilities to utilize it would be warranted.

Noble field.—It is stated that in this field gas is being burned in flares. No figures on the amounts burned could be assembled in the available time. The reservoir is of the gas-expansion type, from which the gas must be produced along with the oil. It is correct that the gas which cannot be used on the leases is being burned, because there is no market for it.

Keensburg field.—It is pointed out that there has been drilling in the Keensburg Townsite, that flares are burning at tank batteries and near a loading rack; that fire hazards exist in the town because of lack of dikes around tank batteries and proximity of flares to inflammable materials. Undoubtedly, increased fire hazards exist in Keensburg Townsite on account of the close drilling. The estimated gas production from all the wells at Keensburg is only 750,000 cubic feet. Of this, 250,000 cubic feet is used. The remaining amount, 500,000 cubic feet of gas per day, is so small that no investment for utilization of this gas could possibly be justified.

North Aden field.—It is stated that gas is being burned in flares.

The available data indicate that this field never was of sufficient magnitude to support the construction of gas processing or transmission facilities.

Storms.—The waste of gas in this pool is covered in my statement.

Mr. Cole. Did you have an opportunity to read Mr. Schilthuis' statement?

Mr. Robinson. Yes, sir; I have read it.

Mr. Cole. On page 12 of Mr. Schilthuis' statement he says that in open-flow operations of oil fields about 25 percent of the ultimate recovery was produced during the first year of flush production and that such operations, or such open-flow production resulted in 30 percent waste of the ultimate oil recovery.

I expect you could adopt that statement?

Mr. Robinson. Pardon.

Mr. Cole. There is no difficulty about the correctness of that statement, is there?

Mr. Robinson. I think, Mr. Chairman, that while it is a general statement, I hesitate to take it as a universal rule. I think it would be necessary to examine the conditions in each pool and perhaps experiment with the pool under control.

I think also possibly it might be a good rule in water-drive fields which conditions exist in most southern fields.

Mr. Cole. I did not anticipate that there would be any difference. Mr. Schilthuis represents the States of Texas, Louisiana, and New Mexico, and under the heading of "The estimate of the magnitude of effect of production rate on waste" there is not any doubt that he said just what I read to you. But I understand that you challenge the correctness of that statement?

Mr. Robinson. I think, Mr. Chairman, that his statement applied to and probably is correct, so far as the water-driven fields in the South are concerned; but I should say that it might not be a universal rule.

Mr. Cole. Well, would it be a rule that would apply in Illinois?

Mr. Robinson. Most of the fields that we are dealing with in Illinois have no effective water drive. There is a question of whether water drive actually exists in many of them; but at the rate of production, it has not demonstrated itself.

Mr. Cole. Of course, Mr. Schilthuis did not qualify his statement at all. It was left to the committee as though it was to be applied most any place.

If you were able to do so, how would you change the estimates of Mr. Schilthuis in applying it to Illinois?

Mr. Robinson. I should say, Mr. Chairman, that in the gas-expansion reservoirs, we have in Illinois, in my opinion, and I perfectly frankly admit that there are differences of opinion on this point, it would be my belief that the waste might be somewhat less than that; but after all that is a point that cannot be demonstrated. The differences cannot be very well demonstrated in most cases, as the reservoir conditions in Illinois and the South are very much different. However, there are water-drive fields in Illinois.

Mr. Cole. Can you give us any estimate that applies in Illinois such as Mr. Schilthuis has?

Mr. Robinson. I think we have not been producing in Illinois long enough to have sufficient background to allow one to venture a quantitative estimate.

Mr. Cole. You agree with me, I am sure, that Mr. Schilthuis' statement might very properly apply in Illinois or any other State.

Mr. Robinson. Yes, sir.

Mr. Cole. Well, let us do that. Assuming that he is right and that you are wrong, can you apply his figures to Illinois?

Mr. Robinson. Well, of course——

Mr. Cole. That is, translate it now as to Illinois on the basis of 430,000,000 barrels which you gave as the figure a few minutes ago.

I was willing not to take the figures of the Oil and Gas Journal of 600,000,000 barrels, but reduce that to 430,000,000.

By the way, can you give us what the production was in Illinois last week?

Mr. Robinson. Last week, Illinois averaged 408,000 barrels a day.

Mr. Cole. 408,000 barrels?

Mr. Robinson. Yes.

Mr. Cole. They are going up pretty lively, are they not?

Mr. Robinson. Yes, sir.

Mr. Cole. Let us take the 408,000 barrels a day last week. That amounts to approximately 150,000,000 barrels yearly, does it not?

Mr. Robinson. Something like that. I do not know exactly.

Mr. Cole. Well, that in round figures is about what it is.

So that the present daily production in Illinois would result in about 150,000,000 barrels a year.

Mr. Robinson. If that is continued; yes, sir.

Mr. Cole. Now, then, if the Illinois reserves as of January 1, 1940, totaled, according to your figures, 430,000,000 barrels, at the current rate of production, Illinois is producing at such a rate that 40 percent of the total reserves of that State are being produced in a single year.

Mr. Robinson. Yes, sir; understanding, of course, Mr. Chairman, that under actual conditions of production, even those of Illinois, you cannot actually produce that much oil from that much reserves in a year. That is, if no more were discovered.

Mr. Cole. That is what is going on now.

Mr. Robinson. Yes, sir; that happened last week.

Mr. Cole. What?

Mr. Robinson. That was true last week.

Mr. Cole. And I do not know whether it is going to keep up next month, or whether it is going to go up more, or whether it is going to fall.

Mr. Robinson. The production from the Devonian Reservoirs will fall very, very rapidly, and a demonstration of that is that it is already falling in the early wells in Salem.

Mr. Cole. All right; let us accept that as correct. According to Mr. Schilthuis' testimony, if they are producing at this time at the rate of 40 percent of the total reserve of the State, then at this rate of production, according to Mr. Schilthuis, it would result in about 40 percent waste of the ultimate oil recovery in the State, would it not?

Mr. Robinson. I have not multiplied it out.

Mr. Cole. You can figure these things better than I can.

Mr. Robinson. That is approximately true.

Mr. Cole. That is approximately true.

Mr. Robinson. Yes.

Mr. Cole. And if Illinois continues at the rate she is going now, according to Mr. Schilthuis' testimony, Illinois will waste 40 percent of the ultimate recovery of the oil of that State.

Mr. Robinson. Yes, sir.

Mr. Cole. That is right?

Mr. Robinson. I think his figure was 30 percent, was it not?

Mr. Cole. Thirty percent.

Mr. Robinson. Yes, sir.

Mr. Cole. Thirty percent?

Mr. Robinson. Yes, sir.

Mr. Cole. The 30 percent was based on his figures, of a 25 percent rate of production; but you have gone far over that and are up to 40.

Mr. Robinson. That is true, for a very short period; but I think that would not hold indefinitely.

Mr. COLE. I am willing to leave it at 30, if that is agreed to by you.

Mr. ROBINSON. Well, I do not, myself, think that we are wasting that much in Illinois even under present conditions.

Mr. COLE. Mr. Schilthuis' theory, if applied to conditions in Illinois leaves no doubt whatsoever, that a 30 percent waste in ultimate recovery of oil in Illinois will occur if present conditions continue.

Mr. ROBINSON. According to his interpretation.

Mr. COLE. That is right. I do not approve of anything like that; do you?

Mr. ROBINSON. No, sir.

Mr. COLE. All right; I have one other matter here, now, Mr. Robinson, and I will ask you to straighten me out on this if you can.

When the committee visited Illinois shortly after the discovery well in the deeper Devonian lime in the Salem field had been completed, we got out of the machine at that point.

Mr. ROBINSON. I remember.

Mr. COLE. Since then, according to your testimony, and the oil trade papers, many other wells have been completed in this deeper sand and Illinois crude production has been advanced quite steadily.

Mr. ROBINSON. Yes, sir.

Mr. COLE. Until it is today 408,000 barrels.

Mr. ROBINSON. Yes.

Mr. COLE. It is the general practice to acidize these Devonian wells as soon as they are completed?

Mr. ROBINSON. Some operators acidize immediately and some wait a few days. It is the general practice to put acid in them.

Mr. COLE. Will you explain that operation to the committee?

Mr. ROBINSON. The oil in the Devonian is in limestone or dolomite. This rock is soluble in hydrochloric acid and the acid is pumped into the well under pressure and left to react on the rock. The acid is put in under pressure so that it goes back some unknown distance from the bore hole and eats away some of the rock, and enlarges the channels through which the oil enters the hole.

Mr. COLE. You were with us the entire time in Illinois and we heard nothing, during our visit there about this method of recovery. I read in the Oil and Gas Journal of February 8, 1940, where mention was made of a well which was completed a mile south and a half a mile west of the discovery well—which the committee saw.

Mr. ROBINSON. Yes, sir.

Mr. COLE. When completed the well flowed 52 barrels per hour, naturally; but was acidized with 5,000 gallons and then flowed 1,243 barrels in 3 hours, or at the rate of 10,000 barrels daily.

And, other wells are referred to in the same article which were acidized upon completion and flowed at various rates from 3,000 to 6,000 barrels daily.

You are personally familiar with these operations?

Mr. ROBINSON. Yes, sir.

Mr. COLE. And in the same publication, Oil and Gas Journal, issue of February 1, they mention a well of the Magnolia Petroleum Co., No. 31, W. D. Young, which flowed 2,964 barrels of oil and 35 million cubic feet of gas daily, making a gas-oil ratio of nearly 12,000 cubic feet per barrel and this well was acidized with 5,000 gallons, increasing its output to 5,947 barrels per day when it was slightly deepened. So that these articles to which I refer and your testimony today presents conditions in Illinois substantially different from what it was when we visited there?

Mr. Robinson. Yes, sir; due to the development of the Devonian.

Mr. Cole. Yes.

Mr. Robinson. The gas-oil ratios you have in mind are much higher than the average in the pool according to my computations of February 4. My figure is based on a considerable number of wells and is 1,600, rather than the 20,000, or whatever figure the Magnolia is given.

Mr. Cole. Well, do you regard the present practice in Illinois of acidizing wells good practice, or does it result in waste?

Mr. Robinson. No, sir; I do not think acidizing results in waste.

Mr. Cole. Not the acidizing itself, but does the way it is being done in Illinois result in waste?

Mr. Robinson. Well, in the production of oil, when we get the oil all taken care of, the gas blows to the air, and because the gas is blown into the air so fast, there is no one who will make the investment in facilities to handle the gas that is produced in such a short time in that volume. If production were restricted in rate, then the gas which comes with the oil would also be produced at slower rates and there would be certainly a much better opportunity of utilizing it.

Mr. Cole. When we were in Illinois, the committee was not told of any wells producing more than three to six thousand barrels, and it is evident from the articles to which I have referred, that the gas-oil ratio in some of the new wells is running as high as ten to twelve thousand cubic feet or blowing off 25 to 35 million cubic feet of gas daily from these wells.

I want to know if, assuming that is correct—I do not know about the correctness of the statements, but they are taken from the Oil and Gas Journal—and, assuming that they are correct, does not that tend to pull water into the producing formation, resulting in waste?

Mr. Robinson. If the reservoir was demonstrated to be affected, that is if water were coming in, it would be true. But that thing has not been actually demonstrated in the Devonian Reservoir at Salem (in the Salem area water has not appeared in the wells).

Now, as I explained, or as I mentioned in the paper, the Sandoval field a few miles west of Salem had a very active water drive which became apparent almost immediately, and the general geological conditions surrounding the two fields are similar; but there is actually, and I guess we could go so far as to assume that in all probability there may be some water drive in the Salem field, but actually there is no evidence of it now. If water drive does appear in Salem or if the water drive exists, then the present production methods will probably result in uneven encroachment of water which will probably cause waste.

Mr. Cole. Have you in your paper stated how much oil the Illinois refineries are processing today?

Mr. Robinson. No, sir; I did not give you that information.

Mr. Cole. The Bureau of Mines' report states that Illinois refineries are using an average of 158,000 barrels of crude oil daily, during 1939. Do you recall whether that is correct?

Mr. Robinson. No, sir; I do not know whether it is correct or not. Refining is outside of my activity and I would have to investigate and get that information. I do not have it before me.

Mr. COLE. And at the time, in 1939—I take the figures for 1939, because later figures are not available—but, they are changing so rapidly there that the average daily production in Illinois for the same 258,000 barrels, which would suggest that 100,000 barrels more oil is being produced in Illinois than is actually being refined within the State.

I assume that this quantity was being shipped to other States from Illinois.

Mr. ROBINSON. Yes; I think that that is a reasonable conclusion; yes, sir.

Mr. COLE. So that today if your daily average is 408,000 production as against 258,000 for 1939 and the amount refined, produced in the State, consumed in Illinois, is approximately the same, the quantity shipped out of the State into interstate traffic would be over 200,000 barrels a day, would it not?

Mr. ROBINSON. That seems reasonable; yes.

Mr. COLE. Yes.

Mr. ROBINSON. Unless more oil is refined in Illinois. That I do not know.

Mr. COLE. Well, I expect we can agree that this rapid increase in production in Illinois is due to the Devonian development, is it not, and is not being consumed in Illinois?

Mr. ROBINSON. Yes; but where it is being refined, I would not know.

Mr. COLE. It is going out into interstate channels to other States.

Mr. ROBINSON. Presumably.

Mr. COLE. What market is taking it, do you know?

Mr. ROBINSON. I have some figures here as to where some of the Illinois oil goes now to the East.

Mr. COLE. We would like to have those.

Mr. ROBINSON. That is the Devonian.

Mr. COLE. Are those the figures which were in the Herald Tribune recently? I think yours are more accurate. I would rather have them.

Mr. ROBINSON. Illinois is now sending to Canada 28,000 barrels a day; to Kentucky 17,000; to Ohio, 100,000; to the eastern seaboard 13,000; and western New York 18,000; or a total of 176,000, which leaves a little discrepancy between these and those that I have heard. I do not know where the difference is. Perhaps it is refined in Illinois.

Mr. COLE. Yes; but that is 76,000 more than my figures, taking the average for 1939.

Mr. ROBINSON. Yes, sir.

Mr. COLE. All of these markets, of course, the Ohio market of 100,000 barrels—in fact, all of them, are about as accessible to Kansas fields as to Illinois fields, are they not?

Mr. ROBINSON. Well, the width of Missouri intervenes.

Mr. COLE. I beg your pardon.

Mr. ROBINSON. The width of the State of Missouri intervenes between them.

Mr. COLE. But there is not a great deal of difficulty in Kansas supplying this same market, in Ohio, instead of Illinois?

Mr. ROBINSON. I am not certain, Mr. Chairman; I am not an expert, Mr. Chairman, on marketing or on transportation.

Mr. Cole. Very well. What effect if any, Mr. Robinson, if you know, is the increasing production in Illinois having upon stripper-well production in the same State and in Indiana; especially in those two States?

Mr. Robinson. During 1939 the stripper wells in Illinois, of which there are some 14,000, were prorated to some three-quarters, as I recall it. This may not be exactly accurate. I am speaking from recollection. I noticed last week that the production from the stripper wells had increased. That is the reported production. I have no information as to whether that was due to lifting that restriction or not. In any case, production did increase.

Mr. Cole. Has the price of crude been reduced lately?

Mr. Robinson. No, sir; not the posted price.

Mr. Cole. Did not the Ohio Oil Co. reduce the price from $1.35 to 90 cents?

Mr. Robinson. When was that?

Mr. Cole. Which would mean that much less received by the stripper wells.

Mr. Robinson. Yes, sir. When was that?

Mr. Cole. I do not know what day. I cannot give you the exact date the price of oil in Illinois was reduced, but before that the price of oil in Illinois, in western Illinois, and central Illinois was $1.35. There have been reductions from time to time so that the price in the same region now is $1.05.

Mr. Robinson. $1.05.

Mr. Cole. Yes; some selling for 95 cents.

Mr. Robinson. Some at 95 cents?

Mr. Cole. I think that the Ohio Co. has a posted price of 95 cents.

Mr. Robinson. Well, I was not informed of it. I do not know what the conditions are in western Illinois. I have not been in Illinois for the last few days.

Mr. Cole. How many stripper wells did you say there were in Illinois?

Mr. Robinson. About 14,000 in round figures.

Mr. Cole. And they are being prorated to about one-fifth of their capacity, are they not?

Mr. Robinson. No, sir.

Mr. Cole. On that basis.

Mr. Robinson. No, sir.

Mr. Cole. $1.35 to $1.05?

Mr. Robinson. That is, taking into consideration the cut in price of crude?

Mr. Cole. Yes.

Mr. Robinson. Yes. Their income is changed; yes.

Mr. Cole. Well, that effect is proration of stripper wells, is it not, a cut in price?

Mr. Robinson. I do not know.

Mr. Cole. What?

Mr. Robinson. I do not think so. Price is something different from proration. Cut in price reduces the income.

Mr. Cole. Yes; and if the reduction in income continues as a result of increased production that would ultimately drive the stripper wells completely out of business?

Mr. Robinson. It would drive any well out of business, if you sufficiently lower prices; yes, sir.

Mr. COLE. Not with flush production, and producing as rapidly as they are in the new Devonian development. They can thrive, I suspect, on a whole lot less than $1.05.

Mr. ROBINSON. I would not want to give an opinion on that, without computing it, because I do not know.

Mr. COLE. All right. We will wait until Mr. Hamon, representing the stripper wells, comes on. It may be that he can answer that.

What was the figure you gave of the daily shipment competing with Texas production?

Mr. ROBINSON. I did not mention any oil going to Texas from Illinois.

Mr. COLE. You did not?

Mr. ROBINSON. No, sir.

Mr. COLE. I have before me a clipping from the Herald Tribune, of February 11, to which I referred when Mr. Hill was on the stand, I believe, which gives the figures of Illinois production and its effect on Texas crude and diversion of interstate commerce by Illinois resulting in part from the unregulated production in Illinois. The article states this:

> The eastbound movement of Illinois crude to the New Jersey refineries by one shipper has increased from nothing last July to the present figure of 13,000 barrels daily. This may be increased soon to 20,000 barrels.

Do you know what it is now?

Mr. ROBINSON. I do not know what shipper that is.

Mr. COLE. Another shipper—still quoting—

> Another shipper plans to reopen—

I am reading from the same Chicago paper.

> Another shipper plans to reopen the old trunk pipe-line system with the present daily movement from 25 to 30 thousand barrels of Illinois crude to Pennsylvania refineries to be increased.

Do you know anything about that?

Mr. ROBINSON. I have heard it.

Mr. COLE. For continued movement of Illinois crude to the Atlantic seaboard refineries, it states, in competition with Texas crude, is due immediately to the lower cost of moving Illinois crude to the East coast by pipe line in comparison with the current tanker rates from the Gulf. It assumes it is due fundamentally to the lower cost of production of Illinois crude.

Do you have anything to say about that?

Mr. ROBINSON. I have not. I am not an expert on transportation, as I have told you; but as I understand it the tanker rates from the South coast to the East coast have increased very materially. I think that might have an effect on it as well as the increase in production in Illinois.

If that is true then, the present coastwise shipping as well as increased production of Illinois would act to change the marketing for the Illinois oil.

Mr. COLE. All right, Mr. Robinson, thank you.

Mr. KELLY. Mr. Robinson, I would like to ask a question. I am sorry that I was absent from the room when you read your statement. I notice here in your statement you say:

> In Illinois the industry is now supporting a movement looking to the enactment of a State conservation law, and it is probable that the State will have such a law at the not distant future.

Can you give any reason why they have not taken any action prior to now?

Mr. ROBINSON. No, sir; I cannot. I do not know the reasons for that. I only know from the press that from time to time the Governor, or someone has said that the Governor had planned to call a special session of the legislature to consider, among other things, oil-conservation legislation. So far as I know that session has not been called.

Mr. KELLY. Well, of course, there has been an unfortunate circumstance prevailing in Illinois so far as the activity of the Governor is concerned due, of course, to his sickness, but the man who has been taking his place, the lieutenant governor, in his absence has repeatedly stated in the press that he was positively opposed to any form of regulation, State or Federal.

Now, the thing we are trying to prevent is being brought about, and I understand that just yesterday he was elevated by a group of people sponsoring his candidacy for the governorship of the State of Illinois.

Now, if he ever happens to win the governorship, in the State of Illinois, there will be no State conservation law or any other law pertaining to the regulation of the oil industry and its products in the State of Illinois.

Mr. ROBINSON. Your opinion is much better than mine on that.

Mr. KELLY. Therefore, with production increasing at the present time, what effect will that have on other States which are marketing their product under State laws in the same markets?

Mr. ROBINSON. You mean what effect will the continuance of the present situation have?

Mr. KELLY. Yes. It will revert back, in other words, to the situation in Texas in 1934?

Mr. ROBINSON. I have hoped all of the time, Mr. Congressman, that Illinois history in this respect would follow the history in other States, that after large production was discovered, and after some discussion, conservation laws would be enacted the same as in other States.

Now, you, of course, are informed on the politics of Illinois and I am not.

Mr. KELLY. Well, it is just a question of how long the other States are going to stand for the State of Illinois not being regulated by statute, by State law, when production in the State of Illinois is increasing daily. I saw in the papers last night that production had reached 409,000 barrels daily.

Mr. ROBINSON. There is a limit, however, I think, sir, to the rise in production from the reservoirs that we know of. I think that production will not go very much higher.

Now, what will be discovered in the future nobody knows. Of course, nobody can answer that question.

Mr. KELLY. Thank you, Mr. Robinson.

Mr. ROBINSON. Thank you.

Mr. COLE. Mr. Dorn and Mr. Heath are the next witnesses. Mr. Kelly will preside for awhile.

Mr. KELLY. We will hear you, Mr. Dorn.

STATEMENT OF FOREST D. DORN, OF BRADFORD, PA., FORMER PRESIDENT OF AND PRESENTED ON BEHALF OF THE PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION

Mr. DORN. Pennsylvania is the pioneer State of the petroleum industry. Eighty years ago, last August, the first oil well was brought in at Titusville, Pa., and the petroleum industry was born. From that day to the present the petroleum industry in Pennsylvania has been in the forefront of the Nation's oil activities. Men trained in Pennsylvania have gone to every oil-producing State in the Union to direct operations in these newer fields; Pennsylvania became an early testing ground for theories and methods in the production of petroleum, and today the State leads the way in secondary recovery technique.

The first production of petroleum in Pennsylvania was wasteful considered by present standards. This was unavoidable. No one knew much about petroleum in those days. Some thought of it as a stream running through the veins of the earth, some pictured it as found in a pool, like an underground lake. In fact, they only knew that it was a natural product which had polluted streams, ruined salt wells, lowered the value of land for farming and it was a general nuisance until someone had found a way to burn it for heating purposes. It was inconceivable then that this strange substance could be wasted.

When, however, a process was developed for making from this nuisance a commercial product, furnishing light and heat, the oil industry itself worked out methods to avoid waste in its production. In the light of modern production and refinery technique, those early waste-prevention methods may seem ridiculous. They were, nonetheless, the foundation of our most modern practices. The significant thing is that these antiwaste programs were proposed, urged, and developed by leaders in the petroleum industry in a day when there was no public opinion on the subject. It is equally noteworthy that as rapidly as these first steps to avoid waste were developed by one unit in the industry, they were adopted by others without pressure from outside authority. This was considered good business practice. It is so considered today.

From those early days to the present time, Pennsylvania producers have shown a very practical concern in avoidance of waste and in developing the largest possible recovery from each field or pool. They are carrying on a continuous research program at Pennsylvania State College which is financed jointly by the State and the industry. This work deals with both improved production and refining technique and is of sufficient importance and standing that the oil industry through producers and refiners from other States contributes financial assistance to obtain the results of the work. The producers themselves have discovered or invented methods of increasing oil recovery; they have adopted improved methods which were discovered elsewhere. As a result of this joint and constant endeavor to avoid waste and increase recovery the Pennsylvania oil industry has increased the amount of its recoverable reserves from an estimated 86,000,000 barrels on January 1, 1925, to an estimated 250,376,000 barrels on January 1, 1940, in spite of a production of 199,418,000 barrels in that interval, most of which has come from secondary recovery methods. What is commonly known as the Pennsylvania grade area comprises the States of New York, Pennsylvania, West Virginia, and southeastern Ohio. The reserves in this area in year's supply at the present producing rate exceeds the commonly used term of years, supply of the average of the country as a whole. Of the estimated reserves of 440,000,000 barrels of oil which can be produced from this Pennsylvania grade area, the recoverable by water flooding methods which is artificial pressure restoration as originated and developed in the Bradford field of Pennsylvania is 220,000,000 barrels, exactly 50 percent of the known reserves of the area. This does not include the increased recovery by air and gas repressuring which is the method practiced in the area south of Bradford. The Bradford field, the greatest example of rejuvenation in the history of the oil industry and which has been increasing its production constantly for over 30 years still has 50 percent of its reserves to produce. It is doubtful if there can be found anywhere any more striking or positive illustration of the success of the petroleum industry in the avoidance of wasteful production or the development of techniques for increased recovery.

The problems in water flooding vary with every property and every well. The correct solution of the problems depends on depth of sand, sand thickness, and porosity and permeability of the sand. Correct consideration of those factors determines the well spacing best suited to the property, the amount of water the intake wells should receive before oil wells are drilled, pressure to be used, and property equipment—whether pumping or flowing. Even after these factors are given the bext possible consideration it is necessary for the operator to feel his way through over the entire production life of the property, varying the controllable factors as experience indicates. The element of time in arriving at the necessary answer to these problems is of utmost importance. To depend on and wait for a Government agency either for its opinion or its approval would be ruinous.

Pennsylvania is not alone in this care for the avoidance of waste in petroleum production. Oil men have never accepted standardized methods of production. They have always been quick to change their technique as improvements have developed. Much of the criticism of waste has actually been due to a comparison between today's methods with the less efficient procedure of some former period. Looking back, almost anyone can see that, by today's standards, we wasted oil 10 years ago, or 20 years ago, or 50 years ago, but if the oil industry itself had not discovered and employed more efficient methods, no one would have had those standards for comparison.

In its program for the provision of an adequate and continuing supply of petroleum, the industry has developed the new sciences of petroleum geology and geophysics for locating new supplies. It has perpetuated the producing life of sands and has restored production in sands which had been listed as "exhausted". It has developed technological improvements which have actually increased the life of the Nation's oil fields by multiplying the yield of products from each barrel of oil. American business ingenuity has accomplished all this without any compulsion from external authority of any kind.

The record of the petroleum industry indicates that there is no general need for an oil control bill such as is proposed in the measure before this committee of Congress. There are cases where it often seems desirable to many in the industry that some superior authority might be invoked when State authority is either lacking or improperly administered. From time to time irritation at restrictions on production, most of them necessary incidents to a program to avoid wasteful overproduction, have caused some to feel that it might be desirable to have some authority over the State regulatory bodies. These expressions have, for the most part, been momentary and passing rather than fixed and have expressed a mood of the moment rather than a considered opinion.

The bill before you is actually limited to the prevention of physical waste. Experts from the governmental bureaus have testified here to the remarkable success of the industry in the elimination of preventable waste. We might well rest our case on their testimony. We do not believe any agency, whether State or Federal, could propose a waste prevention program today that is not based on methods actually in use by the petroleum industry. Any definition of waste would have to be based on comparison of the industry's procedure today with that of some year prior to acceptance of modern methods of production.

There are three great weaknesses in the bill before you: (1) the assumption that there can be a definition of waste applicable to all fields or pools and a formula for its correction; (2) duplication of effort; and (3) the grant of undefined powers to an appointive official.

In regard to point number (1), the best engineering brains available to the industry agree that there are no universally applicable formulas for determining the optimum production from fields or pools. They agree that there is no such formula applicable to all wells in a given pool. Many factors enter into the determination of this question. Those factors cannot be given adequate consideration by someone in a Washington bureau. If the industry really needs external control, then these questions require the intimate knowledge only to be found in an authority close to the physical situation, such as is found in State regulatory bodies. As an illustration of this the bill specifies the intrusion of water as a preventable waste while we in Pennsylvania inject water to prevent waste. In actual practice, the industry in Pennsylvania has been able to operate successfully and to establish enviable standards for waste-prevention without the regulation found helpful in some other States.

In the second place, there would be a costly and unnecessary duplication of authority with a Federal agency attempting to exercise the same control over production which is now effectively done in most of the oil-producing States. Inevitably there would be clashes of authority with the industry cast for the role of innocent bystander.

In the third place, there are no definite limits established to the authority of the administrator of this proposed law. Neither is there provision made for safeguarding the rights of the individual producer. By the terms of the bill, the action of the administrator is assumed to be authoritative and any person aggrieved by his orders is placed in a position where he can only attack a governmental order supported by the powers of the Federal Government.

The person to whom this tremendous power is committed could easily become one of the most considerable persons in the Nation, yet his qualifications for office would seem to rest solely on his ability to secure the appointment to this post. The industry does not know of any man competent to act as a universal arbiter or dictator. If such a man exists, a score of companies would compete for his services, offering salaries with which no governmental agency could compete. No such paragon of perfection exists. We cannot even believe that there is any man to whom this unlimited power over a vital industry could be safely committed.

The petroleum industry is important to the economic welfare of Pennsylvania. During 1939 the estimated value of our petroleum production was $35,230,000. We produced only 1.4 percent of the total national production but a very substantial percent of the domestic demand plus exports of lubricating oils was made from this amount of crude. Since the discovery well of 1859, Pennsylvania has produced 969,270,000 barrels of high grade petroleum. Our oil crop compares favorabily with other crops in our State. The total cash income from all crops raised in the State is $75,700,000 or slightly over twice the receipts from our crop from our subterranean oil fields. All grains raised in Pennsylvania sold for $13,462,000 or a little over one-third of the yearly income from our oil. All our vegetables brought $25,913,000 or $10,000,000 less than our oil. Our fruits gave us an income of $14,735,000, a little more than one-third of our oil income. Oil, therefore, is a vital element of our State economy.

In Pennsylvania the oil industry is not static. It is progressive. On January 1, 1940, we had 81,600 producing wells. Their average production is only six-tenths barrel per day, but the oil they produce is of the highest quality and important to the lubrication of the Nation's finest machinery.

We are still drilling new wells in Pennsylvania. It is estimated by the Oil Weekly that 3,775 wells, including water-input wells, will be drilled during 1940 which at an average cost per well including related equipment of approximately $3,000 will mean a total expenditure of $11,325,000 in drilling. This investment is conditioned largely on that freedom of initiative under which not only the Pennsylvania industry but the American petroleum industry has developed into one of the most important phases of the Nation's business.

We have given careful consideration to the bill before you and have also given like consideration to the achievements of the petroleum industry, its success in the prevention of waste, its care for the largest recovery and utilization of the petroleum resources and its continuous adaptation of the latest scientific technique and we urge that this measure is inadvisable, that it would duplicate work being done successfully by the industry and by State regulatory bodies, that it would hamper and discourage that initiative to which we owe the remarkable accomplishments of the petroleum industry and that it would repose in an appointive official practically unlimited power over a vital industry such as no person known to us should possess. It is urged that this committee make an unfavorable report on the bill.

Mr. KELLY. Mr. Dorn, in the State of Pennsylvania, practically all of the wells are stripper wells?

Mr. DORN. Practically.

Mr. KELLY. If Illinois oil is being shipped to the refineries in western Pennsylvania, what effect has that on the stripper wells producing in the Pennsylvania fields?

Mr. DORN. Are you sure that Illinois oil is being shipped to western Pennsylvania?

Mr. KELLY. Only from the statements we have heard here, that Illinois oil is being shipped to Pennsylvania.

Mr. DORN. To Pennsylvania refineries?

Mr. KELLY. Yes.

Mr. DORN. I do not know about that.

Mr. KELLY. You do not know about that?

Mr. DORN. No.

Mr. KELLY. If you do not know, you do not have to answer.

Mr. DORN. I do not believe that at the present time Illinois oil is being shipped in to replace Pennsylvania crude. Buffalo is running quite a lot of Illinois oil. They built a new Houdrea process up there, which was finished within the last year. That plant never used Pennsylvania crude or had not for a great many years. There are refineries on the coast that have never used Pennsylvania crude and I imagine those plants are using Illinois oil.

Mr. KELLY. Are there any further questions? If not, we thank you, Mr. Dorn.

Mr. DORN. Thank you.

Mr. KELLY. We will hear you, Mr. Heath.

STATEMENT OF FRANCIS E. HEATH, CHIEF ENGINEER, SUN OIL CO., DALLAS, TEX.

Mr. HEATH. Mr. Chairman, my name is Francis E. Heath. I received a bachelor of science degree from Colby College in 1917 and a degree in petroleum engineering from the University of Pittsburgh in 1924.

Since 1919 I have been working on exploration and development and production problems in the oil business. I have been employed by the Sun Oil Co. since 1926, the last few years of my work having been in various phases of petroleum engineering.

My statement will be a review of the progress made toward conservation in the oil-producing industry in the past 5 years and a summary of the previous engineering testimony presented to your committee relative to avoidable waste occurring in the production of oil.

The engineers who have worked on this study of avoidable physical waste now occurring find that such waste is small in quantity and insignificant in relation to the total reserves of oil in the country. Above ground avoidable waste of oil has been virtually eliminated. The small amount of waste of oil now occurring practically all takes place underground in the producing reservoirs, and will be spread over the life of the producing reserves.

The fact that such waste—where any occurs—takes place thousands of feet below the surface of the ground, makes it exceedingly difficult to evaluate. Frequently the occurrence of such waste cannot be proved—let alone the amount thereof expressed in barrels of oil. In such cases where estimates of waste are made there is often disagreement as to amount by competent engineers. Engineers do not disagree on principles. Today you have seen what appears to be a disagreement, but which in reality is a reasonable application of the same principles to strikingly different reservoirs. I think that Mr. Cole in his examination so far of the witnesses has found that we do not have perfect agreement on a lot of applications of principles.

This difficulty of determining the existence of underground waste and the difference in competent engineering opinion in respect thereto was stressed and dealt with at length in the testimony presented to this committee by representatives of the United States Bureau of Mines during the first series of hearings in the month of November last.

It is easy today to put one's finger on all kinds of avoidable physical waste which occurred 20 years ago, when a considerable amount of oil was stored in earthen pits, gas separators were just being experimented with, tanks were not vapor tight, machinery was inadequate, wells were drilled in and allowed to flow over the tops of derricks on completion, drilling and casing practices were chaotic and largely uncontrolled, fields after discovery were drilled up and exhausted in the shortest possible time, gas wells high on structure were blown into the air in an effort to convert them into oil wells, and fields, regardless of type, were produced at their maximum rate. Yet there was at that time little talk about waste above ground, and less about waste occurring underground, for the simple reason that it was not understood.

Ten years ago some of the same type of waste was still taking place, but it had been greatly reduced, especially as regards above ground waste. The subject of avoidable waste due to improper overall reservoir performance was, however, at that time still considered theoretical and given relatively little weight by the industry at large. Many of the practices followed by the industry 10 years ago are wasteful from the viewpoint of today's production technique, even though such practices were considered efficient and proper at the time. The extraordinary advances in production technique—which means avoidance of waste—have been more rapid during the last 5 years than at any other time in the history of the industry. The witnesses representing the United States Bureau of Mines and the United States Geological Survey before this committee last November rendered impartial testimony about this impressive advance and to the industry's continuing search for better methods.

In our opinion the avoidable physical waste in the production of oil has been largely eliminated. If it were possible to apply the presently accepted good practices throughout the country, with Nation-wide reservoir control, it would not add any appreciable percentage to our total national reserves. By this we do not mean that there is no physical waste whatever occurring, or that no avoidable physical waste would occur if sound waste prevention regulations were not enforced by State regulatory bodies in cooperation with the industry. We believe, however, that the present results obtained by the intelligent enforcement of sound State waste prevention laws has resulted in the reduction of avoidable physical waste practically to a minimum. Furthermore, the progress that has taken place steadily during recent years has by no means terminated, but is being continued more energetically than ever thrhough the cooperation between the oil-producing States and the industry. The State conservation laws as well as the enforcement thereof are being constantly improved and are keeping step with the technical advances in the industry.

PROGRESS IN PRODUCTION TECHNOLOGY

The progress made in the development of new methods and technique has been rapid in the past 5 years. The technical man in the producing division of the industry has been pressed to keep abreast of, and to understand, the changes which have been rapidly developed and adopted. As the result of research and the application of its findings, we have radically changed our ideas on many subjects in this relatively short period, and undoubtedly the future will necessitate comparable adjustments. Such changes are inevitable when progress in understanding is rapid. Mr. H. C. Miller and Mr. G. B. Shea of the United States Bureau of Mines in the hearings on H. R. 7372, at pages 320 to 407, made such a thorough presentation to this committee of the producting industry's recent progress that it is felt there is little necessity for covering the same ground. They reported under the following headings, which are repeated to permit additional expansion where it is felt some points have been ovelooked:

(1) Exploration.
(2) Reserves.
(3) Salient facts and statistics.
(4) Development: (*a*) Drilling machinery, (*b*) drilling control instruments, (*c*) prevention of crooked holes, (*d*) slim-hole drilling, (*e*) marine drilling, (*f*) mud fluid control, (*g*) drilling heaving shale, (*h*) electrical logging, (*i*) coring practices.
(5) Trends and practices in well completion: (*a*) Controlled pressure drilling, (*b*) well-cementing practices, (*c*) removal of mud sheath by chemicals, (*d*) gravel packing.
(6) Cost of drilling.
(7) Trend of well spacing.
(8) Production: (*a*) Technological research.
(9) Cost of producing oil.
(10) Oil recovery from reservoir sands.
(11) Proration of oil production.
(12) Unit operation of oil pools.
(13) Progress in curtailing waste of gas and oil in Texas Panhandle field.

Exploration.—The adaptation by the oil industry of gravity, magnetic, seismic, electrical and chemical methods of locating favorable areas for exploration has been rapid. These methods of exploration, coupled with refinements in electrical logging, micropaleontology, heavy minerals, insoluble residues, surface and subsurface geology, and new methods of drilling exploratory holes, have resulted in the producing industry's finding a substantial amount of new reserves by the wildcat wells it has drilled in the past 5 years.

In expanding Miller and Shea's presentation of the data under "Exploration," particularly the last two paragraphs which raise the question of how long can the producing division of the oil industry continue to find reserves sufficient to offset the depletion of old reserves, we present graphically in figure 1 the past several years' production and producing reserve estimates. A study of the facts as charged shows that today finds us with more producing reserves in sight than at any previous time, and insures us of a security in an available supply in excess of any period in history. There is no longer danger of early exhaustion of oil, and unless the rate of discovery materially drops, for several years, below the then current rate of production, there is no ned of alarm from the standpoint of our national welfare. Miller and Shea state substantially the same thing under "Reserves," in the hearings on H. R. 7372, at page 326:

> The fact that the American oil industry continues to discover more oil than it produces and that the trend of the Nation's crude reserves consistently is upward,

reaching an all-time peak at the beginning of 1939, indicates the United States is not yet facing a probable shortage of petroleum and its products.

As reserves mounted the oil-producing industry starting in the late twenties, rapidly inaugurated new procedures, drawing heavily on the then theoretical engineering opinions, adopting those practices that proved sound and discarding those that proved to be impractical. Since that time the development and application of technical knowledge has been rapid, and the progress made in the understanding of oil-producing reservoir reactions has increased tremendously. If it were feasible to chart in detail the progress made in the acceptance and application of more sound producing methods, with time as the base and progress the ordinate, the resulting graph would be a continually rising line.

I would like to state that in this graph of reserves, there is in there a certain amount of oil that must be attributed to improved practices of production. It does not lend itself to an exact analysis, but it is a substantial amount, that is, we have prolonged the producing life of our fields and increased the expected recovery through the improved practices. I wish it could be shown, because it would be very interesting.

Mr. KELLY. You may have that privilege.

(The graph referred to is as follows:)

There is an incontrovertible relationship between the amount of producing reserves available and the amount of oil which can be recovered from these reserves through the use of the inherent natural reservoir energy. A considerable portion of the present producing reserve is made up of oil that would not have been recoverable by primary methods unless, because of increased reserves, the field production rates had been retarded. The increased oil recovery due to improved technique has not been estimated, since it does not lend itself to exact analysis, but it is substantial.

It is essential that discoveries continue if the full enjoyment of the avoidable waste prevention now accomplished is to be retained. This is because of the fact that such large developed reserves are required to currently permit the application of proper production practices and thus assist in increasing the ultimate reserves of the Nation.

Salient facts and statistics.—There is a curious conflict between economics and waste prevention developed in this part of the report which is worth discussing. It is the statement on pages 330 and 331 of the hearings on H. R. 7372:

> The increase in production due to the drilling and producing of wells in new areas makes it necessary for old fields to curtail operations further to prevent a general condition of overproduction; consequently, per-well production and revenues decline, and if the trend continues there will be a time when it no longer will be profitable to drill wells or to keep many of the old wells producing. Such a condition seems to be approaching rapidly, and unless some kind of moratorium is declared on bringing in new wells, per-well allowables to meet current demand for oil will be so small that oil production no longer will be profitable.

The thought in the industry is that new reserves must be developed and produced, if we are to recover from the reservoirs the recoverable oil which we feel can be produced, economically without creating avoidable physical waste. It seems to be a better solution to produce this oil through wells spaced farther apart, drawing on large developed reserves which are slowly depleted, rather than to declare a moratorium on drilling and producing less efficiently from smaller reserves. The increased recovery resulting from ample producing reserves delivering their oil through fewer wells at slower rates cannot be obtained by stopping exploration.

Trends and practices in well completion.—Undoubtedly the greatest single advance in well completion made in the past 5 years has been the method of setting and cementing casing through the sand from which production is to be obtained. The well is completed in the producing horizon by perforating the pipe and cement at the desired points by means of bullets fired from a gun perforator. This permits more selective production practices, and makes available oil from thin saturated sand reservoirs hitherto impossible to produce as well as materially reducing future work-over failures.

It is emphasized that all of the progress made to date in the factors mentioned by Miller and Shea but not again discussed, has been due to extensive research and experimentation by the industry itself.

Trend of well spacing.—Through our own efforts, and in cooperation with the regulatory bodies sound trends in well spacing have been developed. We present graphically, Mr. Schilthuis's table of Trends of Well Spacing Orders in Texas as a definite indication of progress made in a State which was wrestling with the problem during your last investigation. This shows that spacing orders for wells in new fields incorporating from 20 to 40 acres per well has increased from 27.2 percent in 1934 to 80.5 percent in 1939.

The Texas Railroad Commission issued, effective February 1, 1940, a State-wide 20-acre spacing rule replacing its previous rule of one well to 2.06 acres. We feel that this subject should only be looked at from the present and the future, and that spending time on a discussion of past bad practices is unessential. Nothing can now be done to correct what has happened and the producing industry and regulatory bodies see clearly and are benefiting by the errors resulting from the too-close spacing of the past.

The graph is presented showing the trend in Texas.

Mr. KELLY. Mr. Heath, if I may interrupt you to go back to the subject of well spacing: We observed some of that in the Illinois development. I believe they called it the sunflower development. There were wells drilled in a circular formation. I believe that the Shell Oil Co.'s field there had one well to every 20 acres in a similar formation.

Mr. HEATH. Yes, sir.

Mr. KELLY. And then they had the repressuring work being done there. A great amount of the gas that otherwise would have escaped was being put back into the field, repressuring the reservoir; the repressuring well being in the center of the so-called sunflower spaced group of wells.

Mr. HEATH. Yes, sir.

Mr. KELLY. And I presume that that is being developed now in the other fields that are being discovered?

Mr. HEATH. The wider spacing is. Mr. Cheney has a paper on the treatment of well spacing, that covers the general treatment, but that practice of wider spacing of wells is continually progressing and, of course, the repressuring, where it is practical is a very fine step toward getting more oil from the ground and is good conservation.

This graph on page 6 shows the increased number of fields in Texas that by orders of the Railroad Commission have adopted 20 acres or larger spacings since 1934. In 1934 we had very few fields with spacing at 20 acres or more. Whereas last year over 80 percent had spacing at 20 acres or more. Some went to 40.

(The graph above referred to is as follows:)

PRODUCTION

(*a*) *Technological research.*—The technical advance made in the past few years in the understanding of the factors involved in all phases of development and production of oil has been tremendous. From the knowledge gained through research, experimental work, and discussions of common problems, the industry feels that today it can say it is better informed on and, therefore, better prepared to handle its many problems as they arise. The technical man admits that there is still much research work to be done, and feels confident that the results of such work will cause changes in many of our ideas and improvements in our operations.

The number of technical men engaged in various phases of exploration and development has not been determined accurately. From a relatively few a short time ago, their number has increased continuously. A reasonable estimate is that there are at least 7,000 technically trained men in the producing division of the oil industry, based on the membership of the American Association of Petroleum Geologists, the Petroleum Division of the American Institute of Mining and Metallurgical Engineers, the American Petroleum Institute's Division of Production, and other allied technical societies. The industry is adding yearly hundreds of trianed men from colleges and universities. The company research laboratories, experimental field laboratories, supply manufacturing concerns' laboratories, special projects underwritten by the American Petroleum Institute being carried on in college and university laboratories, and the Bureau of Mines' laboratories, are the facilities now being used for experimental and research purposes. Added to this list is the field itself, in which experimental work never ceases.

The information on experimental results is presented to the technical groups through the medium of regional and local meetings. At these meetings, papers and discussion occur of progress in the methods of using old principles. The trade journals and publications of technical societies quickly spread the information to the industry at large. Very important centers of clarification of the practicability of technical advance and the monthly State proration meetings. At these meetings information is presented that hitherto was considered to be confidential in nature. There is little or no failure to present to the industry new thoughts or practices, immediately on their development. The results obtained by their rapid application materially affects the producing properties of all concerned. The lack of laboratory and research personnel is no handicap to the small producer under these cooperative conditions. There is no slowing down by the industry in its effort to improve conditions, and no lag in the spread of information to all of its parts. The producing industry is not stagnant in either thought or action. There is a continual improvement in its practices and it is not content to consider the past as being the pattern for the future, or that today's good practices are also tomorrow's.

The several subjects handled under the heading of "Production" by Messrs. Miller and Shea are well presented and need little comment.

They discussed a new type of field that has appeared since your last investigation. It is the so-called distillate field and presents a problem that is materially different from past producing oil fields. The distillate field is one that recovers a liquid product at the surface, through drop in pressure and temperature of gas. The liquid recovered is considered to exist in the sand as gas, and when no oil accumulation is present the pool is classified as a gas field. An acre-foot of sand in an oil field usually has in it from one to two thousand barrels of oil, while in the distillate field the liquid content per acre-foot of sand is but 2 to 10 percent of this amount.

Since the liquid recovered at the surface is considered to exist in the reservoir as gas and since progressive amounts of liquid are formed as the pressure drops lower and lower, it is essential that the reservoir pressure of the field be maintained to a high degree in order to recover maximum amounts of condensate. The sand in such a pool is visualized as having no oil in it and the condensed liquids that drop out are thought to be retained in the reservoir as a film on the sand grains. Inasmuch as most reservoirs cannot be produced without some loss in pressure, and maximum yield of liquid is dependent on adequate pressure maintenance, the ideal procedure in production practices is to produce the gas from wells, strip it of its economical recoverable liquid and return the lean gas to the reservoir.

The installation of machinery to do this stripping of liquid at relative high pressures and then to recompress it to a point sufficiently high to permit its return to the reservoir, is expensive. Such installations are called recycling plants. New heavy duty machinery and tubular goods have had to be constructed. Reservoir pressures in excess of 7,400 pounds per square inch have been recorded in some of these fields.

This new problem of production is still full of "unknowns" and it will be some time before we can speak with assurance on what are the proper waste-preventing practices and have a complete economic answer. However, it is essentially a conservation measure to produce such reservoirs in the manner outlined prior to marketing any appreciable quantity of gas from them. Steps have been already taken to adopt what are believed to be proper regulations of production from this type of field. The trend in Texas has been to combine the interests of all owners of such reservoirs and to operate such fields as a unit. Texas statutes specifically permit the unitization of gas fields.

There is an additional problem in proper production practices that arises when this type of gas is found in a reservoir that also contains oil. In such a reservoir, because some pressure drop usually occurs due to the production of oil, it is a little more difficult to inaugurate proper field procedures. Nevertheless, there are several recycling plants operating in such fields. In Texas, in November 1939, there were 19 fields in which such plants were either in operation or were being constructed. These installations which are still largely experimental, which practice sound conservation principles and which require large expenditures of money are excellent examples of the progressiveness of the producing industry.

Oil recovery from reservoir sand.—In any study of recovery of oil from reservoirs, it is first essential that one know its oil content. The procedure of study is to examine cores of its sands and determine, in order, the following: (1) The total pore space, (2) the contents of such pore space.

The method of determining pore volume of sand was well developed 5 years ago, but the study of the determination of the material in such pore spaces has had notable advances since 1934. The greatest single advance is the determination of the fact that water has been found to occupy varying percentages of such pore space that hitherto was assumed to have been occupied by oil and gas. The study of samples of fluid obtained at reservoir pressures and temperatures from wells, results in improved determinations of the volume occupied by gas in the pore spaces in the reservoir. Mr. Schilthuis fully developed the significance of these factors when discussing reserves in Texas, New Mexico, and Louisiana. The importance of these studies, other than as a factor for use in reserve estimates and field problems, lies in the fact that we now know that we are recovering higher percentages of oil and that there is much less oil in depleted reservoirs than we formerly believed and consequently that past percentages of recoveries were materially higher than were estimated a few years ago. It is well to point out that cores taken of sands in high-pressure reservoirs reach the surface with a loss of some of the reservoir fluids they originally contained. We would be able to answer many perplexing questions if cores from sands with their original fluid content could be obtained.

The American Petroleum Institute, working with the Bureau of Mines, is trying to perfect a core barrel that will overcome this difficulty, and within the industry a somewhat similar tool is being perfected. When these instruments are perfected, another direct step forward will be made in the accuracy of reserve estimates.

In estimating recovery from reservoirs, the knowledge of the ease with which fluids pass through sands is of value. This is called permeability and is determined by testing cores. Furthermore, in flowing wells, measurements are made at the sand face of pressure changes at different rates of production, and they materially assist in quantifying the permeability of the reservoir sands. Tests of the oil and gas itself at reservoir conditions also assist in estimating recovery factors.

After these fundamental studies are made, these data are then fitted in with the reservoir reactions caused by production of oil and gas and reasonable estimates of oil recoveries are possible. There are variables which cannot quickly be evaluated which make early estimates subject to later correction. The estimate of reserves cannot be exact, but it is substantially better than would have been possible a few years ago.

Engineers generally have accepted the principle that there is a maximum economic efficient rate at any time at which most pools can be produced. This varies between fields and even within the life of single fields and even between wells within the same field. In general, the present average field rate of production is slower than a few years ago. Many original field reserve estimates have had to be raised over early estimates because of their indicated increase recoveries at slower rates of production. It must be borne in mind that, along with the slowing down of the field's rate of production it is essential that individual well performances be efficient if maximum economic production be attained. The common practice of today in completing and producing wells, which is practiced whether or not Stte regulations are existent, results in an efficient well unit on completion. With wider spacing and the resulting larger reserves per well, it has been possible to keep wells in efficient producing condition.

Proration of oil production.—At the present time, 74 percent of the producing reserves of the country are in States which have laws permitting restriction of production to prevent waste. California, with 18.17 percent of the Nation's producing reserve, has a reasonably workable system of voluntary curtailment. There is no question but that the curtailment of production from oil fields has been a contributing factor toward increasing the ultimate recovery of oil from reservoirs.

In this connection an outline of the procedure followed under proration in a State where waste prevention statutes exist and are enforced may be of interest. Let us take Texas and examine what is done to set in action the functioning of its waste prevention laws. A wildcat well, for which an "Intention of drilling form" has been filed, is completed as a commercial well. The immediately surrounding acreage is held by different landowners and operators. The discoverer requests a hearing before the regulatory body to discuss field rules. The railroad commission sets a date for a hearing and notifies by mail all interested parties. In many cases, it does not grant permits to drill additional wells until after the hearing. At the hearing, technical testimony is given on the following items: (*a*) Geological section encountered; (*b*) probable type, size of field; (*c*) characteristics of the producing sand; (*d*) characteristics of the reservoir fluid; (*e*) gas-oil ratios; (*f*) casing program; (*g*) completion data; (*h*) diversification and size of land ownerships; (*i*) other pertinent data.

From these data, recommendations are made by the operators and interested parties to the commission as to proper spacing, drilling and completion practices, production methods, proration recommendations and some opinions as to proper allowables. After the hearing at which all parties in interest are privileged to be heard, the commission issues a field order, incorporating in it their interpretation of the data presented and leaving the subject open to further hearings and possible subsequent changes.

Such an order, when issued, accomplishes practically the same results, as to ultimate spacing of a field, proper conservation measures in development, completion and production methods, and in reservoir performance, as would be realized under unitization. This is very important progress that we have made. The restriction on output retards overdevelopment and practically eliminates wasteful practices. It leaves competition in force and thus insures rapid adoption of superior methods of development and operation.

It would be incorrect to say that mistakes have not been made by both regulatory bodies and operators in the installation of waste prevention measures. Looking back, it is possible to see clearly what these errors have been and also to see the results arising from such errors. It is only fair to admit that it would have been surprising if no mistakes had been made in handling this problem. With these errors now clearly evident, it is gratifying to see the progress in waste prevention contained in new regulations.

There is a direct relationship between the method used in the distribution of the field's allowable and the degree that waste is prevented. Proper allocation results in ratable production of oil from the fields which in turn results in an increase in its ultimate production. With a proper allocation formula in force early in the life of a pool the ills of too-close spacing are removed.

The regulatory bodies now recognize the fact that it is essential to consider the field as a whole where determining proper production rates of withdrawal. This principle is accepted by the entire industry and is one of the notable advances made during the past 5 years.

Avoidable waste in the production of oil.—In discussing avoidable waste, it is perhaps well that we have clearly in mind the distribution of producing reserves, in order to better visualize the weight that areas have in the general picture. Using as basic data the producing reserves as set out by the Oil Weekly as of January 1, 1940 (Oil Weekly January 29, 1940, p. 52), which totaled 18,751,050,000 barrels, we find that the individual States had the following percentages of known national reserves:

	Percent
Texas	52. 70
California	18. 59
Oklahoma	5. 62
Louisiana	6. 60
New Mexico	3. 88
Kansas	3. 36
Illinois	3. 28
Arkansas	1. 60
Mountain States	2. 41
Other Eastern States	1. 96
Total	100. 00

Recombining this table, we find:

	Percent
Mid-Continent area	73. 76
California	18. 59
Eastern States	5. 24
Mountain States	2. 41
Total	100. 00

Oil cannot be produced without some waste. It is no different than other minerals in this respect. The oil-producing industry today does not willfully waste oil, either under ground or above ground. Operators know that committing avoidable waste is inimical not only to their best interests, but also to the best interests of the country as a whole. There is a common desire and a constant effort is made to minimize waste wherever it is practicable to do so.

A simple definition of avoidable waste is impossible. We feel that Messrs. Miller and Shea of the Bureau of Mines made an excellent statement of the principles involved and the impossibility of exactness in definition of avoiadble waste in their statement to this committee, hearings on H. R. 7372, page 298:

> Regardless of the varying definitions and characterizations of waste, the subject falls into the following general divisions:
>
> 1. *Physical waste.*—(*a*) Surface losses (visible), (*b*) underground losses (invisible).
>
> 2. Waste of energy (dissipation of the energy needed for propelling oil through the containing rocks to the wells and thence to the surface.)
>
> 3 Economic waste.
>
> It was stated originally with reference to the above listing—and should be kept in mind in the present discussion—that the three items are so interrelated and interdependent that each involves and influences the other.

And again on pages 383–384:

> It would seem to one not familiar with the technology of oil production that petroleum engineers should be able to tell more definitely than they have in the past what percentage of oil is being recovered from reservoirs now undergoing depletion. Petroleum engineering, however, is a relatively new science, and those engaged in petroleum work are handicapped because they are dealing with exceedingly complex fluids in reservoirs they can "see" only through the records of scientific instruments and the results of research. Progress leading toward more accurate estimates of oil-recovery efficiencies definitely is being made, and the accuracy of the estimates is improving in direct proportion to the increase in the fund of knowledge now being accumulated in the course of studies of gas in solution in oil, conate water content of oil-bearing sand, and other characteristics of reservoir fluids and reservoir rocks.

In studying the problem we have concluded that avoidable physica waste occurs only when there is a loss of economically recoverable oil or gas, either above and below ground. Avoidable waste of oil above ground is considered to be caused by its inefficient separation, storage and transportation. Avoidable waste above ground of gas produced with oil is considered to be limited to that gas which could be, but is not, economically collected, processed and marketed. Avoidable underground loss of oil and gas is considered to be that which is not recovered due to migration from its original reservoir or due to improper use of the natural reservoir energy, both inherent in and extraneous to the oil and gas-bearing portion of the sand.

Notwithstanding the acknowledged impossibility of an exact finding, the survey has been made. It has been done with the background that this investigation was to be primarily for the purpose of determining the degree of the occurrance of avoidable waste in the production of oil in the United States, and to assist this committee in its deliberations on the problem before it.

Avoidable physical waste in the South Mid-Continent area.—The Texas, Louisiana, and New Mexico reserves, on January 1, 1940, were as follows:

State:	*Percent of Nation's reserves*
Texas	52. 70
Louisiana	6. 60
New Mexico	3. 88
Total	63. 18

Mr. Ralph Schilthuis' presentation of producing conditions in these States is thorough. He finds that a reasonable estimate of ultimate avoidable physical waste of oil will be 0.65 percent of the present oil reserves of the area. The major portion of the producing reserves are being produced efficiently. As in all other estimates, this figure assumes that present conditions will continue. It seems reasonable to expect that there will be an increase in the efficiency of production in many of the fields now being operated in a slightly inefficient manner, and it is entirely probable that the above estimated avoidable physical-waste figure actually will be even less. All of the States have reasonably adequate waste prevention laws, and in all of them progress in understanding and cooperation between the industry, regulatory body, and public is constantly improving. The progress gained in the efficient production of oil must be considered remarkable by any unbiased student of the problem.

North Mid-Continent and Rocky Mountain area.—Mr. C. V. Millikan reports on the physical waste conditions in the Rocky Mountain area

(Montana, Colorado, and Wyoming) and the North Mid-Continent area (Kansas, Oklahoma, and Arkansas). The part that these States play in the national reserve picture is as follows:

State:	*Percent of Nation's reserves*
Mountain States	2. 41
Kansas	3. 36
Oklahoma	5. 62
Arkansas	1. 60
Total for area investigated	12. 99

Mr. Millikan finds that the avoidable physical waste occurring in the production of oil in the Rocky Mountain area is negligible.

In Kansas, with 3.36 percent of the Nation's reserves, there is a minimum of avoidable waste now occurring.

In Oklahoma, avoidable physical waste is at a minimum.

The State of Arkansas has recently (in 1939) enacted a new conservation law. The enforcement of the law has resulted in operating conditions that are above criticism.

Illinois, Michigan, Indiana, Ohio, and Kentucky.—Mr. E. G. Robinson finds that in Illinois there is much less waste occurring in the production of oil than is generally assumed to be present. The reason that Illinois has been so much in the limelight is that it occupies a strategic marketing position and the marketing of its production has resulted in distributing the outlet formerly enjoyed by other producing areas. Actually Illinois has but 2.5 percent of the Nation's reserves but is currently prodcuing more than 11 percent of the Nation's daily production. The avoidable waste in Illinois is of small consequence primarily because of the fact that most of the producing reservoirs are of the gas-expansion type. There exists a difference of opinion among engineers familiar with the area as to whether or not some of the fields would have effective water drives at materially slower rates of production. If a water drive were present a lower rate of production would obtain an increased recovery of oil by improved utilization of the natural water flood. In any case a slower production rate would encourage greater utilization of casinghead gas commercially and through return to the formation.

The increased recoveries that may be obtained by curtailment of production and the possibilities that additional fields may be discovered in Illinois emphasizes the likelihood of the early passage of a State conservation law.

The amount of avoidable waste occurring in the States of Ohio, Indiana, Kentucky, and Michigan, whose reserves total but 0.6 percent of the Nation's, is negligible.

CALIFORNIA

California is estimated to have 18.59 percent of the national reserve. Mr. Robert E. Allen reporting on California states that in 1939 the amount of sequestered oil due to some fields producing inefficiently amounted to 1.8 percent of the State's production. This amount of oil was estimated to have been left in the ground and which might later be produced at an increased cost. His opinion is that the future degree of sequestration of oil will be smaller than occurred in 1939.

He shows that California has made surprisingly efficient progress in the reduction of avoidable waste in the last 10 years under their system of voluntary curtailment. Half a score of prolific new fields in the San Joaquin Valley which were discovered in the last 4 or 5 years have been developed slowly with wide spacing and their production curtailed to a small fraction of their rated capacity. Only one field of importance, the Wilmington field in Los Angeles basin, for a time threatened to develop a serious problem of over production due to town lot drilling. This field now however is conforming largely to the voluntary curtailment program.

SUMMARY OF AVOIDABLE WASTE

The investigation of the amount of avoidable waste that will ultimately be caused by continuing present production practices resulted in the finding that it was small in amount. The summation is that it will amount to less than 1 percent of the present oil reserves. This may seem to be surprisingly small but, when one considers that practically all of our recently added reserves as well as many of our older large fields are being produced without waste, it is readily understandable.

For example in the Southwestern part of the United States over 35 percent of the national reserve is contained in only 15 oil fields all of which are being produced efficiently and in which no avoidable waste is occurring. In this group the East Texas field alone contains in excess of 16 percent of the national reserve.

CONCLUSIONS

1. The present national-producing reserves (estimated by the Oil Weekly to be 18,751,050,000 barrels) are the greatest in the history of the country. There is no indication of a change in the trend of increasing reserves. That is, the reserves have been continually increased year by year.
2. The advances made in the science of finding new reserves have been rapid. The oil industry is vigorously continuing its successful exploration campaign. The continuation of the finding of new reserves is as essential to the welfare of the oil industry as it is to that of the people of this country.
3. The methods of drilling, completing, and producing wells have undergone constantly improving changes in the past few years. The industry is carrying on research over a wide range of subjects and experimenting with new and improved practices. The adoption of such improved practices is rapid and the results of the findings of research are immediately made available to the entire industry.
4. There has been a steady improvement in the State conservation laws, and in their administration as well as an increasing adoption of such laws by new States.
5. A study made in an endeavor to determine the ultimate loss of reserves due to the present existing avoidable waste occurring in the production of oil found that it amounts to less than 1 percent of the present national reserve. I mean present national known reserve.

Mr. KELLY. We thank you very kindly, Mr. Heath.

Mr. HEATH. Thank you.

Mr. KELLY. The committee will stand in recess until 10 o'clock tomorrow morning.

(Thereupon, at 4:25 p. m., the committee took a recess until 10 a. m. of the following morning, Thursday, February 22, 1940.)

PETROLEUM INVESTIGATION

THURSDAY, FEBRUARY 22, 1940

House of Representatives,
Subcommittee of the Committee on
Interstate and Foreign Commerce,
Washington, D. C.

The subcommittee met, pursuant to adjournment, in the committee room, New House Office Building, at 10 a. m., Hon. William P. Cole, Jr., presiding.

Mr. Cole. The committee will be in order.

One of the leading Members of Congress from the State of Kansas, a gentleman who has displayed repeatedly his very intense interest in this problem is the Hon. John M. Houston.

STATEMENT BY HON. JOHN M. HOUSTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF KANSAS

Mr. Houston. Mr. Chairman, I am appearing before this subcommittee to give that which I sincerely believe to be the attitude of the oil industry of the State of Kansas toward the legislation under consideration, as expressed to me in conversations with and in letters from practical operators of my State.

It is my contention that Kansans neither need nor welcome Federal control of their oil industry. They are proud of their development and control of petroleum resources. The conservation laws of Kansas are sound in principle and practice, and they are administered equitably. A system of cooperation between the State authorities and the industry has been worked out which simplifies problems that might develop into menaces if they were handled by a distant, unsympathetic and uninformed authority in Washington to whom Kansas would be only one item in a long list.

Production questions are determined by men who know the situation and who are part of the community. Kansans have confidence in these men because they know them, and if a mistake is made the case can be presented without long delays and expense involved in a trip to Washington.

When they are doing the work so satisfactorily at home, they can see no reason to call in an expensive outsider who could do the job no better and probably not so well as it is being done now.

Kansas cannot afford to have her oil industry injured by absentee administration. It is an important element in the industrial life of the State.

Mr. Joseph A. Kornfeld, of Wichita, Kans., very ably summed up the views of Kansas oil men in an editorial in the Wichita Beacon of December 24, 1939, as follows:

> A most significant trend of the times is the movement toward administrative control, as contrasted with judicial control. By administrative control in Government is meant the operation of functions from a central governmental body not strictly limited by the restrictions of the law of the land. This contrast is the opposition of public law with and over private law, in the sense that the public law places a higher value on the official and his acts, whereas private law places no higher value on official acts and treats all as equal before it.
>
> Administrative control as opposed to judicial control resolves itself into the acts of governmental individuals in the sense that power centralized is at once both vague and far-sweeping. Psychologists say that it is impossible for a human being to exercise a power of determination completely impartial and objective; what he does do is the natural result of a combination of his personal environment, prejudicies and temperament. In a legal sense, what he wills has the force of law and he is, to some extent, freed from the scope and sphere of the laws.
>
> This is a phenomenon operative under bureaucratic democracy, wherever it exists; in that absolute bureaus, boards and government administrative may rule by discretion instead of by law. Technically freed from hampering constitutional checks, they may impose their views of expediency in what they consider to be the public interest or the general welfare, until a congressional act either abolishes their department or after a time re-creates it.
>
> Under such a condition, rights are relegated to the background, the value of property is lessened, the true concept of liberty is diminished and the private law made less operative.
>
> Bureaucratic control thus may go, and often does go, off on tangents far outside the legal circumference originally established by law. As the momentum of duties and scope of geographical influence expends at a tremendous pace, centrifugal force often carries regulation far beyond the legal confines of regulation. The policeman, instead of regulating the movement of traffic, for a time steps into the capacity of the driver of the car of industry.
>
> The need exists for a guaranty of two functions: (1) guaranty against taking for public use without due compensation and (2) guaranty of due process of law. These two guaranties must exist if individual rights of property are not to be destroyed. Thus unchecked discretion and undefined ideas of public policy are constant threats to property.
>
> The Cole oil bill presents the danger of bureaucratic control over the oil industry in that there is no recourse to the acts of the Federal conservation director provided for under the bill. The bill provides principally for the prevention of waste but makes no provision for ratable taking, limitation of production to demand and for correlative rights. The conservation director is empowered with the right to step in in any oil field of the nation, and establish rules after a public hearing is held; the principal danger lies in his exerting those powers not specifically called for in the bill under the prestige of office of a Federal oil director. Opposition to the bill is gaining momentum from the oil trade associations. * * * States rights are at stake, as well as the right of free enterprise and initiative.

Mr. Chairman, I would like to tell the subcommittee something about the oil industry in Kansas and what it means to my State.

Kansas oil wells are not great gushers such as have been found elsewhere. They are small wells. The average output per well per day is only 7½ barrels. There are few flowing wells in the State. All the oil which the 21,264 wells in Kansas produce must be pumped. That means employment of labor. Kansas, in spite of this high production cost, has been making a substantial contribution to the prosperity and general welfare of the Nation. It was giving employment to 9,470 persons at the oil wells alone in 1937, the latest figures available. The refineries in Kansas during 1937 numbered 3,335 wage earners, receiving a total annual wage of $5,399,000.

Oil is a leading crop in Kansas. The estimated value of the oil production in the State in 1938 was $72,100,000. This was one-third of the total value of the leading crops and stock in Kansas during that year including wheat, cattle, milk, corn and hogs.

In the 50 years that Kansas has been producing oil up to January 1, 1939, our total production has amounted to 1,435,000,000 barrels produced at an average value of $1.48 a barrel. Today because of competition, largely based upon foreign imports, the value of a barrel of Kansas oil has dropped to $1.19.

Kansas has not only been producing oil, it has been adding to our reserves by new discoveries promoted by the fairly good price which has been received for our petroleum. During 1938, 43 new fields were discovered in my State with an estimated potential recovery of 65,800,000 barrels, making a net increase in the reserves during 1938 of 6,213,000 barrels.

In Kansas there are 19 companies operating refineries with a crude capacity of 176,800 barrels per day or 4 percent of the total refining capacity of the United States. The amount of oil which Kansas can refine is greater than the amount that Kansas produces, the ratio of refining capacity to crude production being 111.1.

This industry and the economic values which it represents and vital relationships which exist between it and other branches of the Nation's business has developed on a sound basis.

In addition to the active production element in the industry, others in Kansas have an important interest in the efficient local administration of her conservation laws. About 30 percent of the total farm population of Kansas lives on lands which either produce oil and gas or are under lease for that purpose. The owners of these lands, where productive, derive substantial income from the royalty, or share of the revenue, and where not productive they receive rentals. In addition, they are paid bonuses for signing leases, the amounts varying according to the proximity of the land to oil and gas production or to position on known geological structure considered favorable to the discovery of new fields.

Fortunately, the leasing activity and the development of western Kansas came at a time when the area was badly in need of money. Independent producers started the "play" and their number increased as one county after another became productive. In the 10 years, 1928–37, inclusive, it has been found by a careful check of the activity over this period, that a total of $40,500,000 came into western Kansas in the form of bonuses for leases and that $56,500,000 was disbursed for rentals on acreage.

At the beginning of the year 1938 there were approximately 10,250,000 acres under lease in the western part of Kansas—west of R. 1. Average rental being paid on that date was 75 cents per acre.

It was the area west of R. 1 that was in greatest need of this help. R. 1 is the meridian which passes through Wichita. East of this is the older producing area of the State, whose development dates from 1889. Included in the area west of R. 1 and counting those counties through which this meridian passes, there are 61 of the State's 105 counties. They have a total area of 34,009,609 acres; thus, on the first of 1938 approximately 30 percent of this area was under lease. Some of them were as high as 90 percent leased. Some, far from producing fields, were 2 and 5 percent leased; all, however, were sharing to some extent on the huge disbursement of rental money.

The leasing activity began a little back of 1928 in the western Kansas area. In 1927 there was a total of 870,000 acres purchased. This jumped to 1,550,000 acres in the following year. The next year, 1929, was the high point of lease acquisition, with 4,500,000 acres added. In 1937 there were 1,750,000 acres purchased—put under lease—and of this, as of the other figures given in this paragraph on leasing, it is estimated that 95 percent or more was west of R. 1.

As one example of the disbursements in counties not yet producing oil, Ford County, with total area of 692,480 acres was 30 precent leased at the beginning of 1938. That would mean 207,744 acres and at 75 cents per acre the indicated income from rentals is $155,408 per annum. The total tax on farm lands and improvements for 1937 in Ford County was $239,821. Still more striking is Grant County. Its total area is 369,920 acres and on January 1, 1938, it was 80 percent leased. At the 75-cent rental, that would indicate receipts of $221,952. Its tax bill for 1937 was $98,920 on farm lands and improvements.

For all the 61 counties west of R. 1 and through which that line passes, the total taxes levied on farm lands and improvements for the period October 16, 1937, to October 15, 1938, was $10,919,274 and the oil "crop"—income from rentals, bonuses, and royalties for the year 1937—was $19,600,000.

In 1936, when the taxes on farm lands and improvements were $10,018,367, the oil "crop" amounted to $15,440,000.

These revenues, incidentally, compare quite favorably with the Federal payments on crops and livestock. In 1936 such payments for all Kansas totaled $34,718,000 and total oil revenues from the three sources—rentals, bonuses, and royalties—for all of Kansas are estimated at $18,542,563. In 1937, the oil "crop" went ahead of the Federal disbursements, the figures being $18,512,000 from the Government and $22,836,000 from oil. The chief difference is that the oil money did not swell the public debt and does not have to be repaid in any form by the recipients.

The big year for Kansas oil was 1937. Total production for the territory west of R. 1 and the counties through which that line passes was 43,361,350 barrels and the average price was $1.25.

The several thousand wells that have been drilled left a portion of their total cost in the community in the form of wages paid to labor, mostly spent in turn in the community. Expenditures for food, lodging, clothing for the army of oil operators and their employees; the purchase of supplies of all kinds, including oil and gas, in the numerous towns where leasing and development have been carried on for years; the creation of taxable wealth, helping to bear the cost of Government; the payment for shooting rights on acreage where seismograph parties were working—all make up an amount not susceptible of estimation, but undoubtedly quite large.

Kansas has developed these closely integrated phases of her petroleum industry under home rule and local self-government. The people of our State cannot seriously consider changing from a system which has proven so successful and in which they have a representative part to an untried program in which they could not share and the success of which is so highly problematical.

We will hear Mr. Cheney at this time.

STATEMENT OF M. G. CHENEY, COLEMAN, TEX., PRESIDENT ANZAC OIL CORPORATION

Mr. Cheney. Mr. Chairman and gentlemen of the committee.

Mr. Cole. You are speaking on the important subject of oil spacing.

Mr. Cheney. Yes, sir.

Mr. Cole. Tell us a little of your background, your education and qualifications, before you being.

Mr. Cheney. My name is Monroe G. Cheney. For the past 15 years my residence has been Coleman, Tex. I received a bachelor of science degree in 1916 from Cornell University, specializing in petroleum geology during my senior year. This was followed in 1919 by 3 months' study at the Royal School of Mines, London.

Since 1919 I have been chiefly engaged in managing an oil-producing company of small size. Study and application of efficient oil-producing methods have demanded and received much of my time, especially during the past 10 years of adverse conditions imposed by relatively low prices for our product.

WELL SPACING

Proper spacing of wells has remained a difficult problem both for the petroleum industry during 80 years of expanding development and for State agencies during the past 25 years of formative regulation. Serious questions of physical waste, economic waste, and property rights are involved.

I. IMPROPER SPACING OF WELLS CAUSES WASTE

It is generally recognized that either large physical or large economic waste, or both, may result from improper spacing of wells within an oil field. If the wells are drilled too far apart some oil otherwise economically recoverable may be left in the reservoir, and if drilled too closely both oil and capital may be wasted. The physical and economic factors which determine optimum spacing of wells are now determinable within reasonable limits and should be applied in the development of new fields.

Doubtless well spacing is more generally a question of economic rather than physical waste. Fundamentally, physical and economic waste appear so interrelated as in effect to be practically inseparable. Physical waste of our present seemingly abundant, but exhaustible, petroleum supply will lead to earlier dependence on high-cost sources of oil such as oil shales, lignites, and coals. Since our total national reserves of oil from all sources is very large, our present interest in regulating oil production may be based more logically on the conservation of low-cost oil readily producible than solely on an adequate supply for future generations. If we are thus to provide for the economic welfare of the future, it is reasonable that we should consider the economic welfare of the present including the problem of economic spacing of oil wells.

To neglect economic waste is to encourage physical waste, for low prices for crude oil must inevitably cause premature abandonment of thousands of small wells. This will become more and more the case as wells are completed at greater and greater depths with increasing investment and operating costs.

II. CAUSES OF IMPROPER SPACING IN THE PAST

A. UNRESTRAINED APPLICATION OF THE "RULE OF CAPTURE"

The chief cause of excessive and uneconomic drilling programs in the past has been the unrestrained application of the "rule of capture" which was propounded by the courts prior to the careful analysis of reservoir conditions and production problems by petroleum geologists and engineers. The desire to capture as much oil as quickly as possible and to avoid drilling of dry holes formerly led to close drilling of wells regardless of engineering or economic considerations. The equitable allocation of well allowables based on sound engineering data automatically prevents excessive drilling. This has been demonstrated in the many and increasing number of oil fields which have been or are being developed in an orderly, efficient, and economically sound manner during recent years. It is well known that progress in this direction has been due chiefly to extensive research work by the oil companies as well as ever-increasing attention to sound engineering principles by various governmental agencies. Under prevailing State conservation regulations, the oil industry is rapidly substituting efficient, orderly development and production methods in lieu of the wasteful practices formerly forced on the industry when the "rule of capture" theory was predominant.

B. EXISTENCE OF SMALL TRACTS

Until recent years there has been no legal means of providing equitable treatment to the owners both of small tracts and of the tracts adjacent thereto. This problem, which has disrupted many plans for optimum spacing of wells, is rapidly disappearing through enactment of State legislation and equitable allocation of production allowables. New Mexico, Oklahoma, Louisiana, and Arkansas have passed laws providing for the pooling of small tracts to form efficient development units and give both needed protection to owners of small tracts and equitable treatment to all concerned. In general, State legislatures have responded readily to requests of their oil administrative agencies and citizenship for adequate conservation laws although in a few cases such action has awaited legal crises which follow critical court decision, or economic crises more or less local, which inevitably follow excessive rates of drilling and production.

III. EXCESSIVE DRILLING OBSTRUCTS CONSERVATION

Improper spacing and inequitable allocation of allowables invariably obstruct oil conservation. Once begun, as in the East Texas field, there follows a serious chain of difficulties. Undoubtedly this huge prolific field with its many small and irregular ownerships presented unusual difficulties of administration. Added to this was the lack of adequate conservation laws in Texas during the early development period of this field. At that time spacing and proration practices were legal experiments and compromise arrangements appeared necessary to secure the immediate cooperation of recalcitrant oil operators in an effort to quickly remedy chaotic conditions. Revision of Texas, State conservation laws, subsequent court decisions, and growing recognition of the controlling principles now give assurance that these conditions will not recur in Texas.

Neglect of prevention of economic waste and the theory that in all cases more wells meant higher percentage of oil were important factors contributing to the overdrilling of the East Texas field. This field may be used to illustrate the difficulties which ensue from excessive drilling. First, when too many wells are drilled in a field, demands become insistent for more daily allowable than good conservation practices permit, Secondly, when the spacing is irregular, withdrawals are excessive and areas densely drilled become centers of low pressure toward which water advances unevenly. As a result, oil sands become prematurely flooded, and unprofitable operation and early abandonment of wells follow. In most oil fields the water in the reservoir is more fluid than the oil, hence if moved toward areas or wells producing at a rapid rate, the water is able to crowd the oil aside, thus lessening the percentage recovery of oil. This may apply also to a gas-drive field as long as high pressures prevail.

Excessive drilling tends to create current oversupply of oil, demoralization of prices and premature abandonment of many small wells, especially in older fields. It is obvious that close spacing has been one of the main causes of excessive drilling. With present day rapid drilling methods, new fields can be quickly drilled and large flush production developed much beyond current needs. This results in dwindling daily allowables per well and general dissatisfaction with proration schedules and conservation programs.

It is desirable that large oil reserves be established. Larger reserves are proved by a given number of wells if drilled on a relatively wide uniform spacing pattern. Drilling of intervening locations can follow later if physical conditions require this for high percentage recoveries. It now appears certain that the oil fields of this country, even if drilled at only a moderate rate, will be able to produce in excess of consumptive needs for many years. In most areas the producers must take into account the fact that there exists only a limited market outlet for oil, and that excessive drilling must cause smaller and smaller daily allowables per well.

IV. EXCESSIVE DRILLING BRINGS UNNECESSARY HAZARDS TO LIFE AND PROPERTY

It should be emphasized, especially in areas of large and high-pressure wells, that each well is a hazard to life and property and that the closer and more numerous the wells, the greater the hazards. The less obvious risk of physical waste in the oil reservoirs from poorly completed or inefficient wells should not be overlooked. The economic waste of capital funds spent in drilling unnecessary wells seems as indefensible from the viewpoint of national economy as the waste of underground resources. In either case, in the long run, the consumer, as usual, will no doubt pay the costs and be the loser.

V. ENGINEERING DATA SUPPORTS RELATIVELY WIDE SPACING FOR MOST NEW FIELDS

A. DURING RECENT YEARS MOST PETROLEUM ENGINEERS AND OIL COMPANIES HAVE ADVOCATED AND PRACTICED WIDER SPACING WHERE CONDITIONS PERMIT

Modern petroleum production engineering data furnish a sound basis for relatively wide spacing for the great majority of the new oil fields without significant sacrifice, if any, in percentage recoveries.

This is due both to the physical characteristics of these newer oil fields and to the much more efficient methods being employed in producing the oil. The oil-producing industry in general, and particularly that large substantial part of the industry which has more than temporary or extremely localized interests, has striven to apply efficient spacing and production practices as rapidly as possible.

The legislatures and oil regulatory bodies of most of the oil-producing States have recognized the significance of these engineering advances, as witness the recent change in Texas of the standard well-spacing regulation to 20 acres per well minimum for new fields. This general order is subject to change where physical conditions justify or require wider or closer spacing. Approximately only one-fourth of the new field rules in Texas during 1935 provided for spacing of 20 acres or more per well whereas in 1939 four-fifths of the rules specified this wider spacing. Minimum spacing of 40 acres per well is becoming common for some types of fields. This rapid change toward wider spacing is based primarily on engineering and production data which petroleum engineers have obtained during recent years plus an earnest desire on the part of most oil companies and State regulatory bodies alike to develop and produce oil in an efficient, orderly manner.

Fortunately, by far the greater part of present known oil reserves are held in water drive fields having relatively permeable continuous reservoirs. This permits very high percentage recoveries of oil from widely spaced wells if production is limited currently to the approximate rate of uniform water encroachment. Most of the remaining reserves are held in fields having gas drive. The more efficient producing methods which have been developed by petroleum engineers for application in fields of this type are being more and more generally applied. The efficient use of the original reservoir energy in gas drive fields and/or the return of gas to maintain or restore reservoir energy creates a sound basis for wider spacing in oil fields of this type.

The oil-producing industry generally recognizes that wider spacing must become the rule if the industry is to carry on efficiently by drilling only those wells which show reasonable promise of at least repaying added drilling and operating costs by producing enough additional oil from the reservoir unrecoverable through other wells within a reasonable span of time. Such are the conclusions reached by the great majority of those engaged primarily in the oil-producing business as may be attested by committee reports and resolutions of prominent petroleum organizations.[1] Such also appears to be the more recent conclusions of the petroleum engineers of the United States Bureau of Mines and of members of various university faculties.

B. RECENT INVESTIGATION BY UNITED STATES BUREAU OF MINES FINDS CUTLER'S THEORY FAVORING CLOSE WELL SPACING HAS BEEN MISCONTRUED AND MISAPPLIED

The United States Bureau of Mines Report of Investigation No. 3479 entitled "Review of Cutler's Rule of Well Spacing," by H. C. Miller and R. V. Higgins, published November 1939, confirms the opinion of most petroleum engineers that Cutler's tentative formula, announced in Bureau of Mines Bulletin 228 (1924), has only limited present application. It is unfortunate that Cutler's tentative conclusions of 16 years ago to the effect that in gas drive fields and within certain limitations, drilling four times as many wells on a tract will double the oil recovery, has been so generally misconstrued and misapplied. Excessive drilling in the East Texas field has been supported by the misapplication of the theory, which until recently, appeared to be sanctioned by the Bureau of Mines.

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[1] Progress Report of American Petroleum Institute Committee on Well Spacing, Proceedings Eighth Mid-Year Meeting, May 1938, General Report Section, pp. 5–20. Resolution of Board of Directors, American Petroleum Institute, 19th Annual Meeting, November 1938, Section 1, General Sessions, p. 26. Resolutions, Annual Meeting, October 1939, Independent Petroleum Association of America, the Independent Monthly, November 1939, pp. 9 and 12.

It is now generally agreed that in most cases high recovery of oil is largely a matter of efficient use of reservoir energy. Miller and Higgins at the end of their paper give results of a calculation which shows that under reasonably assumed conditions only 10 percent more energy would be consumed per barrel of oil if produced from 40- rather than 10-acre spacing pattern. Even much larger differences in energy consumption would be insignificant since the reservoir energy is replenishable either by natural or artificial means. However, there is commonly a limited rate of replenishment of energy which limits the proper rate of withdrawal of fluids from the reservoir. It follows that high percentage recoveries of oil from most reservoirs is far more dependent on efficient production methods and proper production rates than on the close spacing of wells. This must be qualified to the extent that a productive reservoir lacks continuity. Geological considerations impel the conclusion that most commercial deposits of oil must have arrived at their underground reservoir position mainly by lateral migration; hence it is reasonable to assume that most oil has become concentrated and is held in the more continuous and permeable members of the reservoir. Therefore, in general, the productive members are subject to drainage over considerable area. However, for a field such as Healdton (Oklahoma) with relatively heavy oils at moderate pressure and temperature without appreciable water or gas drive, in an irregular sand series about 200 feet thick, relatively close spacing may be justified. Evidently sand reservoirs are local and variable in the Buena Vista field of California, which is the one field used by Cutler not of the shallow gas drive type. Taff [2] has written regarding the Buena Vista field as follows:

> On account of the variability or lenticular nature of the oil-bearing strata, it cannot be said that any well draws its production from a particular zone and in consequence the gravities of the oil vary from well to well, and the oil in a single well may vary likewise from time to time.

It is doubtful if Cutler's limited data based on this field has general significance. As mentioned above, the other fields from which Cutler derived most of his data were six gas-drive fields which had been subjected to rapid, inefficient, and almost complete exhaustion of reservoir energy. No critical data for comparison of original oil content were available for Cutler's use in comparing recoveries from various tracts. The small size of wells in most of his tables shows that he was dealing with tight reservoirs and low pressures. Only a small percentage of this country's known recoverable oil reserves are now stored under similar adverse conditions. Less and less of this Nation's future output will be produced under the inefficient operating methods and/or adverse reservoir conditions which prevailed in these fields from which Cutler derived his tentative conclusions.

As previously stated by far the larger part of our present oil reserves are held in loosely cemented reservoirs where fluid movements occur easily. For example, horizontal movement of oil in the poorer part of the East Texas reservoir at the present restricted production rate can occur theoretically with differential pressure of only a few pounds per mile. To move updip and overcome the influence of gravity differential pressure of about 100 pounds per mile is required. In most of these loosely cemented reservoirs there is a water film between the oil and the sand grains so that the oil migration toward the well is not impeded by adhesion to the reservoir rock but moves through water-lined pore spaces.

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[2] Joseph A. Taff, "Physical Properties of Petroleum in California," Problem of Petroleum Geology (1934), p. 201, published by American Association of Petroleum Geologists.

An abundance of actual field data now available might be offered in opposition to the general application of Cutler's rule. In a large field in northern Stephens County, Tex., while not studied in complete detail, it appears significant to note that tracts which have been drilled on wide spacing have averaged as much oil per acre as tracts with close spacing, the two groups averaging 22 and 11 acres per well, respectively. In fact, the tracts with wider spacing promise ultimately to yield more per acre, for these widely spaced wells are continuing to produce at a profitable rate, whereas a much larger proportion of the closely spaced wells have been salvaged because production became too small to support operating expenses. Wells drilled at center locations late in the life of water-drive fields have found that the water had advanced evenly.

VI. SPACING PLANS AND REGULATIONS REQUIRE DETAILED STUDY

Because there are important differences of physical conditions and/or suitable operating conditions, the problems of well spacing must receive individual attention for each field, for different pay horizons, and for different parts of a large field. Plans and regulations should be made according to geological and engineering data as soon as these can be definitely established. Prior to this, probable conditions based on other fields in the area may be used. The present practice of most State regulatory bodies of holding one or more hearings, and issuing, at an early date, spacing rules for wells in new fields is highly commendable. Past experience, as in the East Texas field, has shown the urgent need of rigid enforcement of uniform spacing rules based on sound geological and engineering data.

Allocation of production to sizable proration units encourages wider spacing. Spacing patterns should be left as flexible as possible to meet unforeseen physical conditions.

The chief objective of proper spacing plans must remain the production of the maximum amount of economically recoverable oil from a minimum number of wells, having in mind that high-percentage recovery of oil commonly depends on proper control of the pool-production rate and the efficient operation of wells rather than on the close spacing of wells. The unique difficulties which arise from the migratory nature of oil should not be allowed to displace or defeat the application of sound engineering practices. The evil effects of the "rule of capture" theory are being rapidly reduced or eradicated by the setting of fair and equitable allowables and the adoption of uniform and wider spacing of wells.

VII. CONCLUSION

Rapid progress toward the solution of the well-spacing problem has been made during recent years by the oil-producing industry mainly through the discovery and application of sound engineering practices.

As a result of continued investigation there has been a marked trend toward relatively wider spacing of wells. This trend appears fully justified from the viewpoint of prevention of both economic and physical waste.

That the general welfare of communities, States, and the Nation is promoted by these applications of efficient engineering practices, including uniform and relatively wide spacing of wells, is now generally accepted by the oil industry and those in charge of its regulation.

Reasonably complete application of these principles in the near future is forecast by the many obvious advantages to be derived therefrom and the accelerated rate of progress in this direction which has been taking place during recent years.

Many of the advantages of unit operation can be obtained through the proper spacing of wells.

During more recent years the State legislatures and conservation agencies have been alert to adopt and improve orders providing for optimum spacing of wells in newly discovered oil fields, or where possible in older fields which are undergoing additional development.

Mr. Cole. Mr. Cheney, you look upon proper well spacing as a very definite conservation measure, do you not?

Mr. Cheney. I do; yes, sir.

Mr. Cole. This question of well spacing was referred to constantly in the New Orleans hearings of the committee. Referring to galley proof, page 16MB—the testimony has not yet been printed—in reply to a question by Congressman Mapes, Colonel Thompson said:

> To be absolutely and completely frank about it, spacing has very little to do with conservation. It is a money-saving scheme to have wider spacing between wells; to not put so much money into the ground, but you will not get any more oil with wider spacing. You will get less oil, but you will not put as much money in the ground in so doing. Spacing is not a conservation measure. It is to conserve dollars. It does not produce more oil. The textbooks used to be more honest than now in that respect. Some of the text writers in order to sell their stuff, are changing their theories and talking about wider spacing; but that is money saving. It does not follow that there would be as much oil produced as from close spacing.

I gather that you do not agree with that statement at all?

Mr. Cheney. I cannot agree that this statement applied in most instances to our present type of oil fields under present production methods. I believe that the theory developed by Cutler does apply to fields with gas drive where reservoir pressures were rapidly exhausted, and there was no replenishment of energy by repressuring. Also, he was dealing mostly with tight reservoirs. Under such conditions close spacing is probably necessary for high-percentage recovery; but we now have many actual experiences from various oil fields with wide spacing that show high-percentage recoveries will result if proper production methods, such as those in general use in recent years, are followed.

Mr. Cole. Well, your paper is quite complete on the subject.

I want to insert a few more references concerning the position of Colonel Thompson on this matter.

Well spacing was discussed at the meeting of the Interstate Oil Compact Commission at Wichita, Kans., on April 30, 1938. At that time Colonel Thompson said:

> Those that have small tracts want small spacing; those that have big tracts want big spacing. The landowner wants small spacing because it doesn't cost him anything to drill wells and it doesn't cost the State anything to drill wells. The supply people here and all over are in favor of small spacing; they sell more pipe and supplies. The tax assessors and county commissioners are in favor of small spacing, because the more wells we get the more they can see and tax. It has a great many angles to it besides making money for the oil people, and we have gradually, as we could, extended our spacing, and our policy has been and is now when a new field is brought in the operators are requested to come to a hearing and bring their requests. If they are good, no matter what spacing it is or how big it is, if they are in accord our Commission adopts that rule.

And then further:

> Each field in our State brings in the question of a separate discussion about what the spacing shall be and what the casing program shall be and what the proration formula shall be. We have every kind, and in some cases we multiply the days of the week by the length of the drill stem and the length of the county and all kinds of formulas. What we try to do is to satisfy the specific group. If somebody has a pet theory and everybody wants it, we give it to them if they all want it. We follow the rule actually of trying to let the operators in their respective and individual pools, as nearly as possible, have what they themselves think is perfect. As long as they are all happy about it we say all right, that will be the rule until you get in a fuss, and when you do we will prescribe one the Commission finds proper.

Quoting further from Colonel Thompson:

> We have a State-wide rule that says no well shall be drilled closer than 150 feet to the property line, and that is a State-wide law, but most of our spacing is 10 acres, has been in the past, and jumping to 20 and now to 40 and one field, as I said a while ago, is 100 acres. We don't care what you do so long as you have rules to go by and all alike, but I do not think it is the proper function of a regulatory body in Texas to tell them what they ought to do about spacing. Bless their souls, let them waste their money if that is their wish.

And further:

> It finally resolves itself into this, and this has been my experience: That the wider spacing will get less oil but you can approach an efficient recovery more nearly by wide spacing, counting the investment, but after all it is a money-making thing.

Do you care to make any comment about that observation of Colonel Thompson?

Mr. CHENEY. I think not.

Mr. COLE. We have with us again this morning whose presence I am delighted to acknowledge, a member of our main committee, and one of the hardest working and most efficient members of the Texas delegation. I understand you happen to be a constituent of Judge South's. He is here with us this morning and wants to ask you a question.

Mr. CHENEY. I am quite an ardent constituent of Judge South.

Mr. SOUTH. Thank you very much, Mr. Cheney.

If you do not mind, I wish that you would state your training and also your experience in the oil business briefly.

Mr. CHENEY. I submitted that just before you came in, Judge.

Mr. SOUTH. That is all right if it is already in the record.

For the past several years have you been engaged exclusively in the oil-development business?

Mr. CHENEY. Yes, sir.

Mr. South. Made quite a detailed study of geology and of the very subjects treated in this paper?

Mr. Cheney. I have.

Mr. South. Over a period of some years and to the exclusion of other businesses—you have not been in politics? [Laughter.]

Mr. Cheney. No. I have just tried to follow something easy, Judge. [Laughter.]

Mr. Cole. For the purpose of the record, Mr. Cheney, I just want to get your reaction to two or three other items I have here, in view of some of the previous testimony the committee has before it.

Mr. Cheney. Yes, sir.

Mr. Cole. These are well-spacing orders.

First well-spacing order, Milroy area, Oklahoma.

This is order No. 12367, dated May 31, 1938, establishing 40-acre spacing in the Milroy area, Oklahoma, is cited inasmuch as it indicates the "money-saving" phase of well-spacing. In its findings, the Oklahoma Corporation Commission said:

> 6. The commission, from the uncontradicted evidence, specifically finds that the maximum recovery of oil per acre from said source of supply will be 10,000 barrels.
>
> 7. That the cost of drilling a well into said source of supply and equipping the same for flowing is $190,000,000.
>
> 8. That, reckoning upon a per acre recovery from said source of supply of said maximum quantity of 10,000 barrels, excluding the one-eighth royalty in which the lessee does not participate, the value of the oil recovered being considered at the present market price, and allowing for the 5-percent production tax, fairly and reasonably indicates a money return to the operator which, balanced with the cost of drilling and operating a well, shows the following:
>
> (*a*) If the source of supply were to be developed on the basis of one well to 10 acres, the loss to the operator per well would approximate $164,000; (*b*) If developed on the basis of one well to 20 acres, the loss per well to the operator would approximate $61,000; and (*c*) If developed on the basis of one well to 40 acres, the profit per well to the operator would be $151,000.

In its conclusions of law, the commission stated:

> 7. That is is the duty of the commission, under said chapter 59, Session Laws 1935, to establish said 40-acre well-spacing and drilling units to prevent underground waste, in the sense that otherwise oil will be left underground in said source of supply, which, in the public interest, should be searched for, found, and recovered.

Does that order indicate to you that money-saving phase of well drilling was the major consideration of the Commission of Oklahoma?

Mr. Cheney. Well, I do not see how we are going to discuss well spacing without getting into economics. That is the reason that in the first subhead of my paper I tried to develop the thesis that physical waste and economical waste cannot be separated. If we are going to drill these wells and properly take care of them, we of course, have to foresee an adequate return for the expenses. If the wells are drilled too closely they interfere with each other and the decline is more rapid. They soon get to the point where there is such a low figure of production per day that they are worth more to salvage than they are to continue to produce and it just has to be figured in terms of dollars and cents. If we are going to carry on this business efficiently and develop an adequate supply for our needs, I think it is proper that the regulatory agencies should consider cost in their well-spacing order.

However, under the present day methods of controlled production and under the type of fields that they are dealing with, I think that there is probably no appreciable sacrifice of ultimate recovery of oil if proper methods are used in fields of the water-drive type, such as they are dealing with.

The recovery of oil is largely a matter of adequate energy in these reservoirs which are quite continuous, such as they are dealing with, and where energy is replenishable either by natural water drive or by the return of gas from the surface, and under conditions of regulated flow and uniform spacing, I believe the recovery will be high, quite as high with 40 acres as with 20 acres under these circumstances. In fact, we have wells that have been prematurely abandoned because too close spacing has led to the rapid decline and such low daily output that they could not be maintained.

Mr. Cole. I have before me another well-spacing order on the Calvin pool, Oklahoma.

In establishing 40-acre spacing for the Calvin pool, in its order No. 12823, dated February 7, 1939, the Corporation Commission of Oklahoma found:

> 7. That taking all of the evidence into consideration including the per acre recovery from said source of supply and the fact that one-eighth royalty is provided for in the leases, in which royalty oil and gas the lessee does not participate, the value of the oil recovered being considered at the present market price, and allowing for all taxes, indicates a money return to the operator of only a reasonable profit if developed on a 40-acre well-spacing and drilling-unit pattern in said common source of supply.

I will say that, in connection with placing these in the record at this point, I deliberately held them until you discussed this subject, in order to give you a chance to comment on any phases of it you wish to. Do you want to say anything about that, for the record?

Mr. Cheney. Just this: Oklahoma permits consideration of the economic waste as well as physical waste.

Mr. Cole. Then, in the Vineyard pool, Oklahoma, in order No. 13050 of the Oklahoma Corporation Commission, dated July 12, 1939, established 40-acre spacing in the Vineyard pool. In its findings the commission stated:

> 4. That all of the wells above-mentioned with the exception of the Stanoline-Amerada and the Continental wells were drilled in the center of 40-acre spacing units, as the land is divided by governmental survey; that the Hunton lime formation from which the oil is produced in said common source of supply is more or less erratic as to its producing characteristics and responds favorably to acidization, one or two of said wells having been reacidized with a resulting increase in daily production; that from the producing history of the wells in this area it is evident that the probable total recovery will be 100,000 barrels from each well if located in the center of 40-acre units, but will probably be much less if closer spacing is permitted; that the cost of drilling a well into said common source of supply is approximately $35,000, and the average cost of production is approximately 30 to 35 cents per barrel; that the producing horizon varies in thickness in the wells from approximately 20 to 40 feet, and water is known to exist in the formation at its base approximately 60 feet from the top of the producing formation; that taking into consideration the porosity and permeability of the formation in said common source of supply and other producing characteristics, and considering the producing characteristics of similar formations in other common sources of supply in the State of Oklahoma and elsewhere, together with other scientific and geological information, the Commission is of the opinion that drilling and spacing units 40 acres in size should be established.

And, for the Lamont pool, Oklahoma, order No. 12978, dated May 10, 1939, setting a well spacing of 20 acres in the Lamont pool, the Oklahoma Corporation Commission found:

6. That reckoning upon a maximum per acre recovery from said common source of supply of 10,000 barrels, and excluding the one-eighth royalty in which the lessee does not participate, the value of the oil at the present market price, considering marketing conditions prevailing in the area, and allowing for the 5-percent gross-production tax, fairly and reasonably indicates a money return to the operator, which, balanced with the cost of drilling and operating a well, shows that if less than 20-acre spacing is established for the development of said common source of supply, wells will not be drilled on each drilling unit or in accordance with the uniform plan, and the result would be that the correlative rights and obligations of the producers and royalty owners interested in said common source sf supply would be prejudiced and impaired and the ultimate recovery of oil from said common source of supply would be reduced.

Do you want to make any comment on those orders of the Oklahoma Commission?

Mr. Cheney. I am not particularly acquainted with the situation and I think I had better not.

Mr. Cole. If you care to make any comments at the time you revise your statement, it will be all right with me for you to do so.

Mr. Cheney. Yes, sir.

Mr. Cole. I think that that is all. We thank you, sir.

Mr. Cheney. Thank you.

Mr. Cole. We will next hear Mr. Henry.

Before we hear Mr. Henry, Mr. Cheney, may I ask you another question? You are president of the Anzac Oil Corporation?

Mr. Cheney. Yes, sir.

Mr. Cole. Who else owns that company with you?

Mr. Cheney. Well, that is a company organized among relatives and friends in 1919. Most of the stockholders are in New York, New Jersey, and Pennsylvania. It is a kind of one-way interstate-commerce transaction. That is, they sent the money down to Texas, and I have not sent very much back.

Mr. Cole. They are the principal owners with you of the company to which you refer?

Mr. Cheney. Yes, sir.

Mr. Cole. A good deal of the stock, common stock, is so held——

Mr. Cheney. Well, there are about 130 stockholders and only 12,800 shares issued, of which I hold about one-fifth, this being about twice that held by any other stockholder. None of this stock is held by any other oil company.

Mr. Cole. That is all. Thank you.

Mr. Cheney. Thank you.

STATEMENT OF WINSTON P. HENRY, HOUSTON, TEX.

Mr. Cole. Mr. Henry, we will hear you.

Mr. Henry. My name is Winston P. Henry. I live in Houston, Tex., and have been actively engaged in the production of oil since 1914. The first 19 years of this period I lived in Tulsa, Okla., and the last 7 years in Houston, Tex. During this entire period I have been an independent operator and at this time am president of a comparatively small oil company; therefore, I wish to approach my subject from the point of view of the small or the relatively small independent oil producer.

I might add parenthetically there that I have been exclusively producing oil all of this time, although I have branched off on the side into the gas business for a short time.

Although H. R. 7372 does not specifically call for unitization, nevertheless there has been so much testimony presented to your committee by Government witnesses and others as to the advisability and necessity of unitization of oil and gas fields, it seems fitting that one of the witnesses from the oil industry should discuss this subject. I wish to approach it from two points of view.

First, "Compulsory unitization of oil fields" as recommended by the National Resources Committee. I wish to show that obligatory unitization is absolutely impossible without destruction of all constitutional guaranties to independent property rights. But, if compulsory unitization can be shown to be impossible, your committee naturally would inquire as to why voluntary unitization has not made more progress. I will endeavor to explain the reasons for this in the second part of this presentation.

COMPULSORY UNITIZATION OF OIL FIELDS

Our first objection to compulsory unitization is that it would be a rapid step toward monopoly.

On page 133 of the report of the National Resources Committee as published by the United States Printing Office in January 1939, the second paragraph of the printed report, under heading "Ownership of Reserves," I quote the following:

> Practically all of the acreage in proven areas has been leased, and most of it is controlled either directly or indirectly by major oil-producing companies.

Practically every major pool is either largely owned by the major integrated companies before the time of discovery, or later by the purchasing of lease properties in those fields. For example, the great East Texas field was discovered by independent operators, but is now largely in the hands of major integrated companies through purchases. The same condition is true of Conroe. But other great fields, like Hastings, Friendswood, and Anahuac on the Gulf Coast of Texas, and La Fitte and Villa Platte in the Gulf Coast of Louisiana were discovered and largely dominated from inception by major oil companies.

The suggested plan for organizing and operating the unitized pools is that these pools would be under the direct supervision of the State regulatory bodies, which, in turn, would be under control of the Federal commissioner. No definite plan of procedure has been set up by the committee's recommendations, but it seems obvious that the development and operating control of each pool would be placed with the major integrated company dominating that given pool, or in the hands of a committee of the major interests in that pool. In nearly every case then, it is a fair presumption that unitized operations would be placed in the hands of major integrated companies, not only because of their domination of the larger fields, but because of their organizations and capital with which the development of a large unit could be accomplished. Independent operators would, therefore, be called on to accept minor interests. Direct control of their property would be taken away from them. They would, therefore, have no say as to how their properties would be developed, or to whom their oil would be sold, or any control over the costs of development and operations. It is further a fair assumption that the integrated company placed in control of a given pool would desire to control the supply of oil from this field for its own pipe lines and refineries, and, therefore, would fix the price which is paid for the oil. The reason I say that is that I am satisfied the smaller operators in many cases would not be satisfied with the prices being paid and would run to the Federal Commission, or the Federal Government for relief and the Federal Government under this system would come in there.

It is a very complicated problem to say exactly how much a certain type of crude oil is worth, and the only protection heretofore that the independent operator has had is where competitive pipe lines are bidding for the crude output. Prices of refined products fluctuate from day to day. Certain refineries need a certain type of crude to supply their individual needs; other refineries have superior equipment to turn out special products, and the average oil producer, therefore, cannot determine the value of his product. Where no competition exists, the minority interests must accept any price offered them, and in a case of a unitized pool would have no control over the price paid. This situation would undoubtedly lead to Government price fixing, the results of which are generally destructive, because it tends to destroy competition and free enterprise, and runs contrary to fundamental economic laws.

Let us now attempt to visualize the suggested method of procedure when a new oil field has been discovered. The National Resources Committee, on page 216, paragraph 4, outlines this as follows:

> The major characteristics of unit operation are preliminary exploration in the case of new fields, compulsory pooling of interests, proper well spacing, acceptance of standard development and production methods, controlled withdrawals, and scientific control. Although unit operation may be established in old pools and even in new pools without preliminary study of reservoir conditions, careful definition of the pool limits and of the nature of the reservoir are desirable preliminaries. Accordingly, all commercial exploitation should be delayed until these ends are achieved and, of course, until a satisfactory agreement has been reached defining each owner's proportionate share of the reservoir content, subject to revision from time to time in the light of additional experience.

Let us endeavor to see what this means.

PRELIMINARY EXPLORATION

First, preliminary exploration in the case of new fields with the object in mind of careful definition of the pool limits. It is to be deduced from the committee's report that this means that sufficient wells would have to be drilled by the authority placed in charge of a given pool until the entire limits of an oil field have been carefully determined, and the oil or gas in place could be calculated so that the portion allotted to each lessee and lessor within the pool limits could be determined. In many cases this would call for a tremendous program. No mention is made as to how these development costs are to be paid for. Take, for example, the case of the East Texas field. This pool was discovered by "Dad" Joiner. A vast majority of the acreage later included in this field was not even leased at the time of the discovery well. To whom would the development program have been allotted by the State authorities? Presumably to Mr. Joiner and a few of the cotton farmers in the neighborhood. It is obviously fantastic to visualize this group carrying on a development program extending into millions upon millions of dollars. The unworkability of such a program is indeed obvious.

But, let us take for another example a field that is discovered by a major integrated company. It would be delegated the authority to develop the field. It is to be presumed that it would then start on the development program. Later on, as the pool was defined, the persons or companies owning productive acreage would be charged with their proper proportion of the money spent, including dry holes, geophysical work, and all other expenses in connection with the program. Supposing the pool proved to be unprofitable, which happens in many cases. From whom would the major company endeavor to collect this loss? Only extremely wealthy major companies could borrow sufficient capital to cover the cost of development without income from current production, with the result that there would be a delay until all of this has been done. This would lead to the sale by independents of their holdings to the wealthier companies at sacrifice prices, and tend to liquidate them as competitors.

Under the system of private ownership, leases are taken for a stated period of time with various rental payments for delay of drilling, and various obligations are entered into by legal contract between the landowner and the lessee. Supposing, as so frequently happens, that many of these leases are about to expire by limitation. To explain that situation, most leases are for a 5-year period and the general trend, inasmuch as we have too much production at this time, is to wait until the very tail end of that period, or as long as possible, before drilling, so that it is very frequently that men will let their leases about expire by limitation of the 5-year period before they begin drilling. Under the proposed suggestion, the lessee could not protect his property by drilling and fulfilling his obligations. It is suggested by the committee that the State legislatures providing for unit agreements compel new lease forms to replace present lease obligations. This suggestion means utter disregard of all vested interest, destruction of legal and enforcible contracts, and all the rights guaranteed under the Bill of Rights and the Constitution of the United States to private ownership. But, such a procedure would be absolutely necessary unless the unit authority should see fit, in its omnipotence, to fulfill the various legal obligations of the individual lease arrangements. If it did not desire to do so, it would not have to do so, and the independent operator, who may have risked his all, could not protect his interests even though he had immensely rich productive lands.

COMPULSORY POOLING OF INTERESTS

The second step suggested by the National Resources Committee report is compulsory pooling of interests. I quote:

> The greatest difficulty in setting up a scheme of unit operation is the determination of a basis for sharing the net receipts * * *. Equity would seem to dictate that a property owners' royalty depend upon the oil in place in the section of the reservoir under his land.

This suggestion is that lease and royalty owners be given that proportion of the total unit as the oil in place under each individual tract of land bears to the entire pool. So we find that in addition to drilling a great number of wells to define the limits of the pool, it will now be necessary to drill at least one well on each tract of land, if it is a small tract, or more wells if it is a large tract, and then to endeavor to make an estimate as to the recoverable oil under each and every tract in the pool. Although great progress has been made in attempting to estimate oil in place, still it is not an exact science. If the field were uniform throughout, a reasonably equitable division could be arrived at. Unfortunately, however, production does not always occur in textbook fashion. As a matter of fact, production almost never occurs in perfect uniformity under all leases. On clearly defined anticlines with uniform sand conditions, there are numerous instances where one well on a given lease will continue to produce large quantities of oil long after surrounding wells have been reduced to a stripper stage. Even after complete knowledge has been obtained of all the factors involved, bottom hole pressures, porosity and permeability of the sand, gas-oil ratios, and so forth, it is most difficult to explain such differences in actual production capabilities of individual wells. But in spite of these difficulties, oil in place can be estimated with reasonable accuracy in ordinary flat fields, but we believe engineers will agree that it cannot be done on piercement type salt domes, or pools producing from limestone, and it would be difficult on gas cap types of fields and distillate fields.

The National Resources Committee's report discusses the problem of the sharing of profits and royalties where a gas cap occurs in an oil field. Two suggestions are made as alternatives in endeavoring to solve this problem. First, the report says, on page 219:

> Ben E. Lindsly has proposed that "each tract be credited for both the amount of energy in foot-pounds and the amount of oil that it is capable of contributing to the common pool. A satisfactory formula could be worked out for converting energy credits into oil credits."

Thus we see to what lengths theorists can go when once they have gotten a good start. We are certain that very few oil producers even understand what Mr. Lindsly's suggestion means, and certainly no landowners not familiar with the oil business. Even most petroleum engineers are in agreement that such a plan is, in the light of present knowledge, entirely unworkable. If oil operators were asked to accept payment for energy credits in place of barrels of oil or thousands of cubic feet of gas, it would probably start a riot.

The other alternative suggested is as follows:

> Or the State through the legislature or courts, as a police measure, might require the deferring of the use of free gas at the top of the pool until all the recoverable crude oil has been obtained, at which time the owners of the gas cap would share in the royalties from the production according to the original location of the gas.

Surely nothing could be more fantastic than this. It means that the owners of the land on the top of the reservoir, both lessees and lessors, would be asked to wait until all the oil had been recovered from the pool. This might be 20, 30, 40, or 50 years, or more. It is hard to believe that anyone could be satisfied with such an arrangement, especially those owners of the land who need the money during their life times, and have no children and expect no grandchildren.

The last part of this suggestion is that when all the oil has been recovered, the owners of the gas cap would share in the royalties from the production according to the original location of the gas. The author explains that during the years of recovery of the oil, some of the gas originally in solution in the oil would escape up-structure, and would join the gas originally placed in the gas cap, and it is proposed that the amount of this gas joining the original deposit be estimated for division of profits. Surely no reputable and competent engineer could be found to say that such a division or estimate could be made. Furthermore, contrary to the thought involved in this theoretical suggestion is another theory, namely, that as the oil is withdrawn from the flanks of the structure, the gas cap, which is originally under great pressure, will expand to drive the oil out of the reservoir, in which case a great deal of the original gas in place would be utilized to bring the oil to the surface and would now be extended to cover the entire structure. By the time all of the recoverable oil has been produced, the pressure of the gas remaining would probably be so diminished that its economic value would be only a fraction of its former worth; and this confiscation of value would have accrued solely to the benefit of the oil producers.

It is surprising that the author of this suggestion endeavored to meet the problem, but at any rate, he was wise enough to avoid any recommendations in connection with piercement type salt domes. This is a problem as complex as the gas cap condition. In the case of piercement type salt domes, oil is found in small sand traps down the flank of the salt plugs. There are generally numerous sands found at various levels and at various distances from the salt, and it frequently happens that the engineers actually developing this type of production cannot identify or correlate the sands as they dip rapidly from the wells nearer the salt plug to those wells farther out on the flank. Salt dome production is found on very small acreage and invariably is accompanied by many dry holes during the development of the fields. Furthermore, there is no theoretical means of determining in advance the yield of oil per acre or, in other words, the oil in place. In the case of piercement type salt domes then, a division of oil in place is an impossibility.

PROPER WELL SPACING

In our present knowledge of reserve energy and conditions, and of the other factors that are involved, there is as yet no sure or accurate means of determining exactly what is proper well spacing. Nevertheless, all State regulatory bodies and oil operators are spacing well locations according to the best information at this time. "Well spacing" is primarily an economic problem, whether a field is developed by independent operation or as a unit. The industry is aware that the widest spacing that will effect reasonable drainage is economically desirable; that economic waste will tend to undermine the economic structure of the industry; that too close spacing of wells is economic waste and might lead to premature abandonment of wells and leases; that a too wide spacing pattern is better than one too close, for additional wells can be drilled later if needed to secure the greatest recovery. So, much progress is now being made by the industry along these lines. Unitization undoubtedly would make better well spacing easier to obtain, but the subject, in our opinion, is not of such vital importance as to demand compulsory unitization.

ACCEPTANCE OF STANDARD DEVELOPMENT AND PRODUCTION METHODS

This is the next step suggested in unit operation, but in all States subject to State conservation laws, standard development and production methods are now made effective, so there is nothing new to be obtained from this suggestion. It is now the common practice when a new field is discovered for the State regulatory bodies to set out regulation standards as to where casing is to be set and cemented. Also, under proration, production allowables are made for each well and although this has been regulated heretofore probably with more regard to market demand than the most efficient production rate, there is now a well-formulated trend toward making the latter requirement at least of equal importance. Nevertheless, even under the various State proration regulations now in effect, high gas-oil ratio wells are either shut in or reduced to the point where excessive gas-oil ratio is eliminated, or are allowed to produce only that amount of gas equal in reservoir displacement to the combined volume of oil and gas produced by normal oil wells. Hence, it is difficult to see where compulsory unit operations would necessarily be superior or could be made effective more quickly than is being done at this time by State regulations.

CONTROLLED WITHDRAWAL

As stated above, under proration, withdrawals are already being controlled, and more and more the practice is tending to be based upon the most efficient rate of production in addition to the limitations of market demand.

SCIENTIFIC CONTROL

Through education, self-interest and State regulation, scientific control, according to the limited knowledge of the factors involved, is receiving immense attention and is nearer practical solution. The author of the committee report made an additional suggestion, as follows:

> If the market demand for oil is so small that effective proration leads to the operation of wells at much less than their most efficient rate, proration clearly may damage the reservoirs. Under such circumstances, it probably would be far better for the regulatory body to require the complete closing of part of the fields in the State, and the operation of the balance of the fields at an efficient rate.

It is needless to say that the authors of this paragraph are not themselves dependent for their living or that of their families on any oil producing lease that might be included in the fields that they so glibly and arbitrarily suggest being completely closed in. Such discrimination between oil fields within a State is obviously inequitable and impossible of enforcement. We believe the end to be desired is the most intelligent compromise between the factors of the most efficient rate of production and the market demand.

If it is to be argued that the exact procedure as outlined by the National Resources Committee is not necessarily to be followed, how could it be modified acceptably? We maintain it could not. For instance, if drilling to define limits of oil fields is impracticable, then could the limits be defined by other means? Let us attempt to visualize another procedure. For instance, the first wildcat well is brought in. It is to be presumed then that the Commissioner will secure the geophysical data of the work which has been done in the finding of the structure on which this well has been drilled, but the company which has spent, we will say, the sum of $250,000 to find the structure may be unwilling to give this information to its competitors free of charge. It is hard to see how they could be compelled to do so. Or, if no geophysical work has been done, we will suppose that the Commissioner has it in his power to compel "preliminary exploration," which could mean geophysical work, to endeavor to ascertain the extent of the underground producing formation. Where would the Commissioner get the money to do this highly expensive geophysical work, and whom would he employ? Would he draw a theoretical circle around the discovery well and charge every lease owner proportionate amounts for the geophysical work to be undertaken, and, if so, to whom would that money be paid? Supposing some of the lease owners could not pay their assessments? Who would be asked to supply this deficiency in funds? But, presuming that some arbitrary method could be determined upon, and money from some source could be raised for this preliminary exploratory work, and the work was done and a good structural condition discovered. It would be a most exceptional case if the producing area was in accord with the geophysical picture made. If subsequent drilling showed that the producing formations did not conform with the geophysical picture, then would the Commissioner be allowed to assess some new participants, and, if so, how would he return the money expended on the first geophysical survey to the lessees who had been assessed for this work but were not now included in the producing area?

How often would the Commissioner call hearings for this purpose, and would those oil producers included in a theoretical circle be compelled to travel to Washington at their own expense for these meetings? But, presuming that the impossible could be accomplished and the Commissioner has been able to proceed to a preliminary outline of the field, and that subsequent developments show this outline to be largely incorrect, then could it be changed to conform with the facts disclosed by further drilling? If so, it would then be up to the Commissioner to take the next step. This, presumably would be to appoint some one of the operators, most probably a major company, or a committee of producers, representing the lessees included on the geophysical picture determined by the Commissioner as the operating agent. This oil operator, or committee of operators would then set about developing the field. In order to do this, the appointed authority would have to collect money from all the lessees within the given circle. The agent would have to adopt the proper well-spacing rule, and work in developing the field would then proceed. If the sum collected did not prove to be sufficient would the constituted authority then have the power to prove or require additional assessments from all the lessees for the development program? Presumably, he would. What would he do if some of them were unwilling or unable to pay their assessments? If further drilling proves that certain areas belonging to these lessees who had contributed were devoid of production, how would the constituted authority return their share of the money collected and spent? If the Commissioner in his omnipotence decided that a recycling plant was desirable, after the first two or three wells had been completed, would he have the authority to require the installation of such a plant, even though the majority of the operators did not think this to be a wise procedure, and could he compel them to pay to his delegated authority their proportionate cost of such an expensive installation?

Nearly every oil field is composed of numerous land holdings, from which many different types of leases have been entered into by contract between the lessor and lessees. Some of these lease contracts may call for a well to be drilled within a short period after a producing oil well is brought in within a certain distance from the boundary of this particular tract. If this procedure did not meet with the approval of the Commissioner, would he have a right to cancel this clause and arbitrarily destroy the contract entered into between the lessor and the oil operators? If not, would he be compelled to develop the field in accordance with these legal obligations?

What kind of procedure would the Commissioner take in compelling the theoretical group of lessees to combine their interests under a unitization agreement? Presumably, he would compel the various interested parties to take undivided interests in the unit magically determined by him. If so, would every participant, both the lessees and lessors participate in the oil runs from the discovery well, and subsequent wells before their individual properties had been proven productive? If so, some of the participants in this arbitrarily selected group might secure a considerable income when subsequent events would prove that their holdings were not productive. How would the Commissioner then secure a return of the money that had been paid out to those participating, who because their land was nonproductive, would have to be eliminated from the unit. But, perhaps the Commissioner would decide that they would have to wait until subsequent developments proved the extent of the oil field, and he would require that all income from the sale of oil would be held in suspense until it could be determined who was entitled to his share and to what extent. This might be a very long period, as dry holes have frequently been drilled and later developments have shown that these dry holes condemn only a small portion of the territory, and actually production sometimes jumps over the dry holes and is found in a territory that was once considered condemned.

We, perhaps, have carried these illustrations far enough, although hundreds of illustrations of the practical difficulties could be brought to your attention, which would make such a program a compulsory unitization entirely unworkable and impossible of execution.

But, perhaps a few more illustrations of the various difficulties to be encountered would not be amiss.

Supposing the field under discussion proves to be nonprofitable? Can the unit authority continue to experiment and prospect at a continuing loss? Would he have the authority to put members of the unit further into debt without their consent? When an oil field is discovered and the surrounding lands become potentially very valuable, invariably there is much litigation over many land titles. Sometimes there will be numerous claimants and the litigation will last for several years. This problem could be solved by holding in suspense the royalties due the lands under litigation, and could be worked out satisfactorily if the oil field proved to be profitable, but, if it were not, the unit interests that put up the money for the development of the field would have to absorb an additional share of the losses. Many similar illustrations showing the impracticability of compulsory unitization operations could be made.

COMPARISON OF FEDERAL AND STATE REGULATIONS

The whole thought of the H. R. 7372 bill and the report of the National Resources Committee is based on the assumption that the State authorities and the oil operators are guilty of waste and that the Federal Government would be more efficient if given control. Is there any right to this assumption of superiority? The National Resources Committee states that between 7 and 8 percent of the production of the United States comes from Government owned or controlled lands. What has the Government done on these lands to indicate its superiority? Let us examine, for instance, the Government controlled lands of the Osage Indians in Osage County, Okla. This area has been producing oil for approximately the past 35 years. Only in recent years have any progressive steps been taken along the lines of conservation, and nearly all these progressive measures have been promoted and inaugurated by individual producers and not by the Federal authorities. I quote now from a recent letter from Hugh G. Stalcup, vice president of the Skelly Oil Co., Tulsa, Okla., which company operates prominently in Osage County:

> In the summer of 1935 a group of 15 operators holding leases in what is known as "South Burbank Pool," upon their own motion and initiative unitized what was then about 85 percent of the known reservoir and installed a pressure-maintenance project, after securing a blanket lease covering the areas of their individually owned leases and affecting such areas' unitization. The Department of the Interior at Washington and the local Osage Agency were admittedly helpful in bringing this about, but it is to be emphasized that the whole venture was initiated and carried to fulfillment by the interested operators themselves. Since then these Departments have also been helpful in amending their regulations to provide that excess available residue gas may be used for the purpose of injection into the oil-producing formation. Recently the old Burbank pool and what is known as the Stanley Stringer pool have been included in this operation, but again let me repeat that the decision to make all three of these pools a common reservoir was promoted by the oil operators.

In another instance, the naval reserve pool in the Osage Nation presented a very difficult problem, for the Government had made an early mistake in leasing its land for gas under large blanket leases. Thus the oil rights were held by a number of operators and the gas rights were owned by one large gas company. I again quote from this letter:

> On the gas cap of the naval reserve oil pool the gas company was taking gas from the common reservoir and at the same time much gas was admittedly being wasted down-structure by oil producers. Oil producers and the gas lessees worked on this problem for 6 months, again on their own initiative, in an attempt to solve the difficult problem. This was finally worked out to everyone's satisfaction by certain compromises, which, briefly, entailed reinjection of surplus residue gas either into the oil-producing zone or its boosting into the lines of the gas lessees.

This protected the gas company's rights to secure gas from this field, whereupon they closed in their wells on the high portion of the structure. I quote once more from this letter:

> Again both of the Federal departments were helpful in these negotiations, but it is not exaggeration to say that 90 percent of the credit should go where it properly belongs, to the forward-looking producers. No Federal agency has taken advantage of the fact that the royalty rights in the Osage Nation are commonly owned, except to inaugurate the hereinbefore-mentioned rules and regulations, after frequent requests, conferences, and demands therefor by the producers, and I know of nothing that has been done in this regard that could not have been done by the State regulatory bodies just as well.

Every oil producer or company will readily admit that unit operation is desirable and his fondest wish is to discover a pool on land owned entirely by one interest, because it obviously eliminates many troublesome problems. However, we contend that the advantages, though desirable, are not such that it is a cure-all. The problem is not that unitization is unsound, but that compulsory unitization is wrong in principle and will meet the tremendous resistance, and we think is impossible of accomplishment.

It is to be noted that the authors of the National Resources Committee's recommendations, in order to make their case, go back to Oklahoma City and East Texas fields for examples of unnecessary drilling and other forms of waste. Some illustrations go back to Signal Hill and Spindletop. In no instance do they refer to pools developed since 1934, which is about the time that the courts upheld the various powers of the State regulatory bodies. If they had used for illustrations the hundreds of new pools developed since then they would have had great difficulty in making a case. As has been pointed out before in this testimony, nearly all pools discovered and developed since 1934 have been or are being developed in an orderly manner, under the existing rules of the various State regulatory bodies, which provide for proper spacing of wells, sound drilling, completion, and production practices.

It seems to us that the great mistake in appraching the subject of unit operations has been in attempting to appraise its obvious advantages as against the practices of a former era. It is being compared to the flowing of wells wide open, which practice has long since been eliminated under those States that are being prorated; it is being compared to town-lot developments and the drilling of unnecessary wells, which occurred flagrantly only before the State regulatory bodies had their powers upheld by the courts. If unit operations are to be compared with recent pools, there is not a great deal of advantage for unit operations, as there is now proper well spacing, controlled production, regulations as to gas-oil ratios, controlled withdrawals and proper completion and production methods. What advantages that could be said for unit operations in comparison to those fields now being properly and orderly developed, in our opinion, would be far outweighed by the very obvious disadvantages of compulsory unitization.

We maintain that compulsory unitization can never be carried into effect except possibly by arbitrary decisions of political appointees, and the destruction of all constitutional guaranties to individual property rights.

As to those States which do not have conservation laws at this time, we feel that by education and the demands of self-interest they are bound to adopt such legislation. We further believe that a thorough investigation of conditions in these States would not show any great avoidable waste and that no emergency exists that could possibly call for general Federal overlordship.

Furthermore, we believe that democratic methods of procedure, although always slower in obtaining results, are more desirable than compulsory and arbitrary dictation. We definitely feel that if such laws were passed as recommended by the National Resources Committee, that the day of the independent oil producer would be past and that the economic destruction of such a vast number of prosperous and useful citizens would do irreparable damage to the Nation.

SUMMARY

By way of summary, we submit that "compulsory unitization of oil fields" is wrong in principle and unworkable in practice:

(1) It would tend to destroy free and independent enterprise by practically eliminating all competition. It would obviously give con-

trol of American oil fields to the major companies, and therefore, would work toward monopoly. Compulsory unitization would call for preliminary exploration, which would cause an uncalled-for delay and is economically unworkable.

(2) Appraisal of oil in place is an inexact science and a reasonably equitable division is very difficult in many fields.

(3) The great difference in financial resources between the large corporations and the smaller units would often make compulsory unitization tantamount to confiscation.

(4) Compulsory pooling of interests would change our present conceptions of the property rights guaranteed to every citizen of the United States.

(5) Compulsory unitization would almost inevitably lead to price-fixing.

(6) Most of the advantages of unitized operations are now being obtained under State regulation.

(7) There is very little avoidable waste, and certainly not enough to justify any demand for Federal control.

(8) Compulsory unitization would necessitate a vast increase in Government bureaucracy, and we are opposed to any further concentration of power in the Federal Government.

VOLUNTARY UNITIZATION AGREEMENTS

The recognition of the very serious practical obstacles and objections to obligatory unitization does not mean that we think the present system is perfect and that nothing needs to be done to improve matters. We do feel, however, that the greatest of the ills which it is sought to correct by compulsory unitization can be achieved along the road of voluntary cooperation. That such cooperation is possible has been proven in many instances in recent years. More can be done and will be done in the future along these lines, for it appeals to the powerful motives of self-interest and greater profits. Conditions vary greatly from pool to pool and from time to time, and a plan of development acceptable to the operators in one pool might not apply to another pool. We think therefore, that it would be a great mistake to pick out one form of development, such as unitization, and then insist that this particular scheme of cooperation must be complied with everywhere.

Nevertheless, it is desirable to inquire as to why this practice has not been more widespread. Many of the arguments against compulsory unitization could be repeated in connection with voluntary agreements—that is to say, the small independent operator naturally hesitates to turn his properties over to the larger units because thereby he loses control over how the properties are to be developed, the costs of development and operations, and the inability to select the purchaser of his individual oil. He cannot completely protect himself by contract. It is the belief of the independent operator, and we believe that the facts will sustain it, that development costs and operating costs of properties operated by major companies are almost invariably greater than where the individual conducts his own operations. The additional costs not only arise because the larger companies are more cumbersome and less inclined to work for reduced costs and the use of suitable second-hand materials, but also it is the established custom for the major companies to charge handling costs on the purchase of materials and a proportion of all their huge overhead expenses. The independents are also fearful of not getting paid a commensurate price for their product where there are no competitive pipe lines.

As was pointed out in the first part of this paper, many of the advantages of unit operation are now being obtained under State regulatory bodies. That is to say, proper well spacing, standard development and production methods, and controlled withdrawals are all enforced under present State authorities. Practically speaking, the only major advantage difficult to obtain under State rules and regulations are artificial pressure-maintenance projects in connection with new fields. This generally calls for some form of cooperation although most of these projects are now being operated without unitization. In practically all fields, proration has so reduced the income of the average operator that large expenditures for pressure-maintenance installations are discouraged.

Month after month the oil operators' income has been reduced by the lowering of well allowables. Many of the individuals have borrowed money at the banks to develop their properties and the bankers who loaned their money on what was thought to be a basis of a 2-year payout are now forced to wait 4 and 5 years to get their money back. The bankers are restless and the operators are worried. Many pools are so pinched in that the present return on the investment is very slow. Therefore, is it any wonder that in pools restricted to this extent the average operator is discouraged to make a further investment in a recycling plant which can only benefit him in the far distant future? Naturally he will postpone such a project and will figure that a repressuring plant at some later day will probably secure the greatest recovery anyway. Furthermore, water drive in pools now under severe proration is doing the same work that pressure maintenance could do. That is to say, where the oil withdrawals are very slow, operators have found that the water drive is maintaining the reservoir pressure in many instances.

So also, repressuring of old fields, although being done extensively, has been held back by low prices and lack of demand, as the installation costs and lifting costs are much higher than where the wells are being pumped under natural methods of recovery.

Why should an operator be expected to foster or join a voluntary group to produce more oil that is not needed and perhaps has no market and thus deplete his property on a low-priced market? Literally thousands of stripper wells are being maintained without profit in the hope that some day prices will be higher and the time will arrive to recover the oil remaining underground. Second recovery methods, then, such as the reinjection of air and gas, or water-flooding, can be confidently expected to be used when prices and the demand for oil justify these methods.

Further, the economics of pressure maintenance in new fields as compared with the costs of repressuring when the original reservoir pressure has been considerably reduced, is still a controversial question. As to whether the greatest ultimate yield can be recovered by pressure maintenance or later by secondary methods is also a subject of argument in the oil industry. As new reservoirs are found at greater and greater depths, higher reservoir pressures are naturally encountered. To install recycling plants for the object of maintaining pressure, very expensive machinery must be purchased to force the gas back into the formations because of the high reservoir pressures. For instance, in the Old Ocean field, Brazoria County, Tex., where a recycling plant is now being constructed, each individual compressor is costing approximately $50,000 and the entire plant will cost well over $1,000,000. The economic question then is, will an operator make more money and secure a greater ultimate recovery by installing this high-cost machinery in the early stage of an oil field than he would if he waited until a large amount of the original reservoir pressure had been depleted and he could install less expensive machinery for maintenance of a lower reservoir pressure.

But, in spite of this economic problem, the oil industry can assure this committee and the general public that when the oil in the present known reservoirs is needed it will be obtained.

The question therefore as to why voluntary unit operations have not been more widespread, can be easily explained. Under State regulation nearly all of the benefits of unitization are now being attained without compulsion. Those few methods that will make for greater recovery such as pressure maintenance and the use of secondary recovery methods are being retarded by low prices and the severe restrictions on income of lower and lower allowables. Again let me say that when the oil is needed it will be recovered.

I would like to say there that I am not one of those who think this oil is lost forever or that there is any real permanent loss. I have been spending much of my time during the last 16 years in secondary recovery methods, and studying that problem as to how to get the oil which was left there in previous operations, and I have come to the conclusion that, given the price, given the demand and the incentive, that practically all of that oil can, and will be recovered.

Now, we have just started on secondary recovery methods, and we are probably in a very sophomoric period. That is, I think we can comfortably expect that some bright lad will come along with a new idea most any time to start some new means of getting more oil out of the sand. Human ingenuity, I believe, can be relied on to get that oil out whenever we need it.

When it is realized that present knowledge of reservoir conditions is of comparatively recent date, and that the proper utilization of gas energy in a field was only first publicly advocated by Henry L. Doherty in about 1925, the oil industry should be commended rather than criticized for the great advances it has made along true conservation lines.

Mr. Cole. Mr. Henry, did you know that the National Resources Agency was studying unit operations?

Mr. Henry. Did I know that they were studying it?

Mr. Cole. Yes.

Mr. Henry. Yes; I got the impression from the report that they have given a great deal of thought to it.

Mr. Cole. I mean, before the report was out, did you know that they were studying it?

Mr. Henry. No; I did not. I only read the report within the last couple of weeks.

Mr. Cole. That is the report for 1939?

Mr. Henry. Yes, sir.

Mr. Cole. I do not think that the report for January 1940 has been printed.

Mr. HENRY. No; I have not seen that. The one that I read was January 1939.

Mr. COLE. Thank you, Mr. Henry.

Mr. HENRY. Thank you.

Mr. COLE. Mr. Henry, I want to ask you another question. While you were testifying I had in mind some portions of this bill and some of the testimony before us. I have located it now, and I want to call this to your attention, because of the evident impression you were under that this bill, H. R. 7372 seeks to install the unit system of operation. Do you feel it does that?

Mr. HENRY. No; I do not.

Mr. COLE. What are your views about it?

Mr. HENRY. I feel that every movement, including this H. R. 7372 and the Venezuelan trade pacts, are preliminary steps to the fulfillment of the recommendations of the National Resources Committee.

Mr. COLE. Now, in that connection, I want to call this colloquy to your attention at page 550 of the hearings in November last before this committee. Secretary Ickes was before us, and Mr. Wolverton, a member of the committee, asked two questions I quote.

> Mr. WOLVERTON. Under the provisions of this bill the Secretary makes an an investigation and then announces his findings of wasteful methods that are existing. Could he, under the provisions of this bill, find the facts to be that wasteful methods were in effect because of the failure to adopt the unit system of operation?
>
> Secretary ICKES. I do not believe so.
>
> Mr. WOLVERTON. Then, I assume there is no intention under the provisions of this bill to take jurisdiction in matters of that kind?
>
> Secretary ICKES. That is correct.

That is all; thank you, sir.

Mr. HENRY. Thank you.

STATEMENT OF JAKE L. HAMON, PRESIDENT OF THE NATIONAL STRIPPER WELL ASSOCIATION, DALLAS, TEX.

Mr. COLE. Mr. Hamon, we will hear you.

Mr. HAMON. Mr. Chairman and gentlemen, my name is Jake L. Hamon. I am an independent oil producer residing in Dallas, Tex. I am president of the National Stripper Well Association and am appearing before you in opposition to H. R. 7372.

I believe I express not only my individual views, but also those of most of the owners and operators of stripper wells in all of the oil-producing States, when I say that I am frightened at the suggestion of Federal control of the oil business, and, in particular, of Federal control of "stripper wells."

Mr. COLE. Mr. Hamon, may I interrupt you there just for the purpose of the record?

Mr. HAMON. Yes, sir.

Mr. COLE. In addition to being president of the National Stripper Well Association, what other connections have you with oil or petroleum associations in the country?

Mr. HAMON. Well, I was a member of the Committee of Thirty-Six of the Independent Petroleum Association. I am a director of the American Petroleum Institute.

Mr. COLE. And on the executive committee, are you not?

Mr. HAMON. I am on the executive committee of the institute, and I am vice-president of the Independent Oil Producers Equity Association in Texas; and, I am a director of the North Texas Oil and Gas Association, and of the Oklahoma Stripper Well Association.

Mr. COLE. Former president of the Mid-Continent Oil and Gas Association?

Mr. HAMON. Yes, sir.

Mr. COLE. All right.

Mr. HAMON. I am convinced that such a bill as is here proposed, having for its purpose and intended effect the placing of our property under supervision and direction of bureaucrats in Washington, would eventually put us operators of "stripper wells" out of business; and with no compensating benefit to the public at large.

The "stripper wells" are those which can produce only a few barrels—many of them less than one barrel—of oil per day. They involve a high per-barrel operating cost, because oil does not flow from them as from "flush wells"; it must be raised to top of the ground by pumping and other expensive methods. Most of them produce varying quantities of water with their pittances of oil, which means added cost for raising and disposing of the water. Many difficult operating problems must be met and solved to keep the stripper wells producing. Let us not forget that the flush wells of today will be the stripper wells of tomorrow.

Most of the stripper wells of the country are owned and operated by small oil operators. Such operators are not here before you because they are too poor to afford the trip, just as they would be unable to appear before a Federal administrator. I have worked with them for many years, and I know their circumstances. For many of them stripper wells are their only production and, in fact, their sole source of livelihood. A number of them even live with their families on the lease. They themselves act not only as owner but also as pumper, gager, and wellpuller. For many of them, this lease where they maintain their homes and rear their children, under the shadows of their sagging derricks, is the only property which they own. For them, anything which affects the production of their small daily ration of oil directly and vitally affects the slim margin of income by which they and their families live.

Furthermore, there are scores of such stripper-well communities throughout the oil country. With the golden boom days far behind, these towns depend almost entirely now upon the income from the stripper wells as redistributed to their retail merchants, their store owners, their professional men. Business property values, local government, public schools, all depend for existence upon the thin stream of fluid—often more water than oil—which still is pumped from these small wells.

Much of this stripper production had been operated at a loss, or negligibly close to it, by large companies with fixed overhead. Subsequently it was taken over by a former pumper or other employee when the company found it necessary either to sell or abandon the properties. Some of these stripper-well owners acquired their few small wells under such a friendly farm-out, promising to pay their former employers out of a portion of the income. Thus they have the added cost of amortization of their investment, and in effect stand more or less in the position of a sharecropper. In fact, I might even say that the small stripper-well owner bears, in the oil industry, the same relation to the large company that the sharecropper bears to the large landlord in farming.

And for some of them, the margin of a living income is equally narrow. One has only to read the report of the Government's witnesses for the Cole subcommittee, Messrs. Miller and Shea. These Bureau of Mines' engineers include a report on stripper areas made by Hopkins and Stone, and comment as follows:

> Hopkins and Stone indicate that the average small stripper operator in Kansas is losing money if his average output per well is less than 1 barrel of oil a day. (Petroleum Investigation, p. 379.)

It happened that Kansas was the field of this inquiry, for the facts developed there are true for all the oil States with stripper production. And yet 1 barrel a day is a high average in many stripper areas. All Pennsylvania wells, in 1938, for instance, averaged only six-tenths of 1 barrel per well per day. New York had 1 barrel per well per day average, and Kentucky 1.1 barrels. Old fields in my own State of Texas average as low as two-tenths of 1 barrel per well per day (South Bosque field), and six-tenths of 1 barrel per day at Corsicana.

The paper of Messrs. Miller and Shea, which was placed in the record in the hearing before your committee in Washington last November, also discusses some of the other difficulties confronting the stripper wells. Those gentlemen concluded that the stripper-well operators had been "getting by" by forgetting depreciation and depletion costs, and that, even so, the margin of income over current operating costs is very small.

Nevertheless, it is in the public interest that the stripper wells continue to produce—that the camel's back be not broken by added straws of bureaucratic red tape and "absentee" regulation. So long as they are operated the stripper wells are an important asset to the country and furnish employment to thousands of persons. When they are abandoned they are no asset at all, and furnish employment to none.

And just here may I make it clear that stripper-oil fields are not exempt from regulation under terms of this bill. In fact; as a memorandum prepared for your committee by the Petroleum and Natural Gas Division of the United States Bureau of Mines, and bearing the title "Oil Fields to Which H. R. 7372 Would Apply," specifically sets forth:

> In the broad sense, the provisions of H. R. 7372 would apply to every oil field in the United States.

And later the same memorandum lists 11 causes of waste, of which one is:

> Abandonment of any well in such manner as to render any crude oil unrecoverable or reservoir energy unavailable for the recovery of crude oil.

This emphasizes the power which would be given the administrator under the proposals of the Cole bill to determine which wells might or might not be plugged. That is the power of economic life and death over the small well owner, for under this bill the administrator has the right to refuse to permit the plugging of particular wells no longer capable of producing enough oil even to pay the cost of production, much less afford a margin of living for their owner. Should the administrator, upon the supposed ground perhaps that the price situation was in his view temporary, order the small well owner to keep on producing these pumping liabilities, in the same of "preventing waste", then the stripper-well owner would not only be producing without any profit but he would be producing at a constantly mounting loss, which he would be powerless to stop without violation of the proposed Federal statute. On the one hand he would face bankruptcy through continued operation, on the other, the personal stigma and financial penalty of breaking a Federal law. He's damned if he does and damned if he doesn't.

Of the approximately 390,000 producing oil wells in the United States, 286,500—nearly three-fourths—are stripper wells. According to the Oil and Gas Journal's careful estimate in their issue of January 25, 1940, the total oil reserves in the Nation amount to 19,687,379,000 barrels. The stripper wells represent an estimated reserve of 3,602,956,000 barrels—more than 18 percent of the total. Added operating costs must of necessity force the abandonment of many of these stripper wells. None of them can stand substantially increased costs of operation. Federal control will increase their operating costs to the breaking point in short order. The expense of clerical help to attend to the preparation and filing of a mutiplicity of new forms; the expense of communicating with Washington, of employing counsel in Washington, of traveling to Washington, of subscribing to various "services" or otherwise keeping informed of the details of a new and necessarily complicated and involved maze of Federal rules, regulations and orders—all these added expenses are immediate, foreseeable and inevitable should this bill become a law. Add to this the expense incident to compliance with diverse and sundry new rules and regulations probably general in their nature, promulgated by an agency far removed from the varied problems of the stripper-well operators—and those operators will face the necessity of choosing between bankruptcy and the bandonment of their wells.

If ever a bill is certain to remove the small well owner from the oil picture, it is this bill—if it is adopted. Whether such is its calculated purpose is, of course, unimportant. That may be subordinate to its practical effect, which is the inevitable elimination of the small independent operator who is now the backbone of the oil industry. I do not believe that you gentlemen or any of those who are urging its passage upon you have any such desire or intention, but regardless of the intentions, such is bound to be the result. And once eliminated from the picture as an independent economic entity, the small oilman is going to have a very difficult time ever reentering the oil business on a similar footing.

Moreover, aside from the matter of expense, we have no confidence that a Federal bureau would be wiser than the State agencies, or better able to regulate the oil business in the public interest. The stripper well operator does not view the Department of the Interior with a very friendly or trusting eye. The unjust and absurd radio broadcasts which have been sponsored by the Department, depicting all of us as profligate wastrels, have not increased our confidence in a fair deal from that direction. The Venezuelan trade agreement which lets in a flood of foreign oil and keeps the price of the stripper wells' product down almost on a level with the cost of production, is not an indication to us that our interests are being zealously looked after in Washington.

I do not pretend to foresee the particular forms which Federal regulation might take, to the injury of us stripper well operators. My point is that Federal regulation will of necessity be more rigid and less flexible, more general and less responsive to varying local considerations, than State regulation; and for that reason I fear it. The oil fields of the United States are so different and are producing under so many different operating conditions, that blanket rulings which would emanate from Washington under this bill would bring chaos instead of order to the stripper-well industry.

Among other results we fear from the present bill, we are afraid it would eliminate the independents from the oil business. Whereas the States have recognized the necessity of keeping the supply of oil in balance with the demand, and State laws accomplish this purpose, this bill makes no provision for maintaining any such balance. It is obvious that when such balance is not maintained, the resulting drop in price hits the stripper-well operator first and hardest; and if, for want of a price for his product which will pay the cost of production, he of necessity shuts down his wells, the result is permanent. These stripper wells cannot be shut down for long periods of time, because the intrusion of water prevents the resumption of production. If they are shut down they must be abandoned. Once abandoned, they will never be redrilled. As Dr. H. A. Breakey said in his testimony before your committee:

> One of the most obvious forms of waste that results from oversupply is the abandoning of stripper wells, because the price is insufficient to pay the cost of production. Most of our producing wells are of this type and they supply a large proportion of the national production. If production from flush wells is permitted to cause the price to go so low that these wells must be abandoned, in which case water, wax, caving, etc., will almost surely prevent its future production, the Nation will have lost an irreplaceable natural resource.

Not only that, but the stripper-well owner will have lost forever his source of income. Oil is not merely interest on an investment. It is the investment itself, which starts its process of dissipation with the first barrel of oil produced. When the last recoverable barrel has been brought up, not only is his income gone but also his capital itself has vanished. Then when the stripper-well operator has to start over he finds he has nothing left but his experience. And without capital he cannot implement that.

Any unbalancing of the sensitively swung see-saw of supply and demand will swing the end of the board down hardest on the toes of the stripper-well owner. Living, so to speak, from barrel to barrel, he has few or no resources to carry him over a period of ruinous prices or blasted markets. When the balance is finally reestablished, if it is, it will be he and not the large company who has perished in the storm. And he will not be able to come back. His reserves are gone, and he is forever out of the picture.

The State regulatory bodies and the interstate oil compact are in immediate touch with the local and varying problems of the stripper wells. We have had repeated proof that they know of and consider these problems. For example, it has been their policy to limit the production of the flush fields so as to provide a market for the stripper wells. They know that the operating and production regulations, appropriate for certain fields and wells, would not be appropriate for others. They are close enough to the scene of operations so that they can regulate in the light of the varying local situations. And they have, over a period of years, accumulated a valuable fund of experience and data, and developed a technique of regulations which, while admittedly imperfect, has as a background several years of progress by the trial and error method.

It is idle to argue that this pending bill will not interfere with the State bodies. In the light of the political history of the country, it is certainly not safe to assume that potential authority vested in a Federal bureau or administrative officer might not be exercised to the fullest extent permitted by the law. Under this bill, if it becomes a law, the State commissions will degenerate into mere subservient appendages of the Federal authority, and the experience, data, and technique they have acquired would be lost. And if it be said that in time a Federal administrative body would itself acquire experience, gather data, and develop a technique, I reply that by that time the stripper wells will have long since been abandoned. They cannot survive a period of Federal experimentation. The guinea pig will be dead!

The stripper-well operator is a small operator; and for the little man, a Federal administrative body is a virtual dictator. He cannot afford to appeal to the courts from unfair or unjust orders. I read recently that it cost in the neighborhood of $25,000 to fight through the courts an adverse ruling of the Labor Relations Board, or the Wage and Hour Board. Even if it could be done for a fraction of that, the stripper-well operator cannot afford to litigate. And if he could, it appears to be the present view of the courts that every presumption is in favor of the administrative board. One unwise appointment, one inexperienced or incompetent appointee, could bankrupt many a stripper-well operator by ill-advised orders, against which the operator would have absolutely no means of defense, and from which he could not appeal. The expense of complying, or the expense of resisting, either, would ruin him.

Are there considerations of public interest which require the passage of this bill, nevertheless? It is said the public interest involved is the prevention of waste of oil. I have asserted above, and repeat, that the passage of this bill would create, not prevent, waste, by increasing the operating costs of the stripper-well operators to the point where abandonment of the stripper wells would be inevitable. It seems a paradox that there should be agitation for Federal control in the name of "conserving oil," at a time when we have the greatest oversupply of oil ever known. We are not running out of oil but are finding more reserves every year.

A record of the oil industry through the year 1939 would certainly indicate that there is no immediate danger of exhaustion of this country's oil reserves. According to the Oil and Gas Journal of January 25, our total reserves, of oil in sight, increased in 1939 by 2,710,388,000 barrels, which was 1,455,604,000 barrels over and above the 1,255,783,000 barrels consumed during that year. But with all the oversupply, and increasing surpluses in reserve, the oil industry has so operated, under the regulations of the States concerned, that no important waste of oil is occurring. I should like to challenge the proponents of this bill to point out where and how any substantial preventable waste of oil is occurring. Certainly all storage of oil above ground is not excessive. If in some fields wells have been more closely spaced than necessary, the loss has been more probably a waste less of oil than a waste of money in drilling, which, after all, has kept steel mills running and furnished employment for a good many men. If it be thought that there is still room for improvement in drilling and production methods, and this be styled "prevention of waste," the States are better able than the Federal Government to regulate intelligently along this line, with due regard to the difference between fields, and to the exigencies of each local situation.

In conclusion, gentlemen, the independent producer has discovered a great majority of the Nation's oil fields. He would like to stay in business, and to cherish the hope that he may discover some more oil fields. The oil business is so large that it is possible for ambitious bureaucrats to point accusing fingers at it, magnifying its mistakes. I submit, though, that these mistakes are not great compared with the progress made and service rendered by the industry as a whole. What mistakes that have been made will not be undone by this or any other bill. We are proud of the magnificent record our industry has made, and of the constant improvement in its production methods, equipment, and technical knowledge. Economically we stripper-well owners are in no shape to stand any experiments. We fear Federal control in any form. We can see no benefit to us or to the public at large from this bill. We know that, if passed, many of us are doomed to financial destruction, and many, if not most, of our wells destined for abandonment. We earnestly urge upon you that this bill be reported unfavorably.

Mr. Cole. Mr. Hamon, you were before our committee in 1934?

Mr. Hamon. Yes, sir.

Mr. Cole. And at that time expressed very definite opposition to the Thomas-Disney bill?

Mr. Hamon. Yes, sir.

Mr. Cole. You were then a director of the Independent Petroleum Association?

Mr. Hamon. Yes, sir.

Mr. Cole. One of the very few directors who took a position at that time against the proposed Thomas-Disney bill?

Mr. Hamon. Yes, sir.

Mr. Cole. Do you know Mr. Hardwicke of Fort Worth?

Mr. Hamon. Yes, sir.

Mr. Cole. You heard his statement?

Mr. Hamon. No; I did not.

Mr. Cole. Did you read his paper?

Mr. Hamon. No; I have not.

Mr. Cole. Mr. Hardwicke made the following recommendations to the committee under the heading of "Desirable Functions of the Federal Government":

DESIRABLE FUNCTIONS OF THE FEDERAL GOVERNMENT

(*a*) Control of imports, (*b*) continue Connally Act, (*c*) improve interstate compacts, (*d*) dissemination of information: (1) Papers by the United States Bureau of Mines, (2) papers by United States Geological Survey, (3) continuation of estimates of consumptive demand, (4) studies of economic problems. (5) studies with respect to legal problems, (6) investigations and reports with respect to waste and the remedy, (7) publication of books.

Do you have any criticism of those recommendations?

Mr. Hamon. No; that is substantially what we now have.

Mr. COLE. Well, under the heading of "Investigations and Reports With Respect to Waste and the Remedy," Mr. Hardwicke had this to say:

> If the conservation statutes are not being effectively enforced by the States, and if there are many wasteful practices going on which ought to be stopped, it would appear that the officials of the Government who are cognizant of these practices, and who are urging Federal regulation because thereof, have not been very specific as to where the waste is taking place or how it could be avoided. The Federal Government could help the States, and would perform a desirable function, by having the proper departments make frequent surveys, publishing reports and recommendations which would be available to the State agencies and to the public generally. Certainly, as long as these investigations were made intelligently by competent men, and the reports presented a real desire to get at the facts and stop wasteful practices, the desired result would likely be brought about shortly after the release of the report. Aid of this character could be given without first passing such a bill as H. R. 7372 or any other similar bill.

Do you agree with that recommendation?

Mr. HAMON. Yes. I have felt for a long time that if the Bureau of Mines in connection with the other work they are now doing, if they could point out to us, after they have investigated an oil field, the errors we are making, it would be of great help to us.

Mr. COLE. How are they going to discover such errors, assuming that they do exist?

Mr. HAMON. Well, Mr. Cole, they have from time to time made surveys of oil fields, and I have criticized them very severely for not being more critical in those reports of the bad practices which they must have found, which they have failed to mention. Notably, I think their reports on the Oklahoma City field is an example of that.

Mr. COLE. And your position is that the Bureau of Mines or some similar equally capable agency should do more extensive work along the line of discovering waste wherever it exists and should have sufficient authority to go in and study the various fields.

Mr. HAMON. Well, my position is that it would involve no extension of the work they are now doing nor increase in their powers, or any other, other than that they be more critical and have more backbone when they have made practical tests, but I do not recommend any change in the status of the Bureau of Mines.

Mr. COLE. Of course, the Bureau of Mines is releasing information as to consumptive demand without any legal authority whatsoever. It is a service which they do voluntarily. I assume that you agree that such work should have the authority of law.

Mr. HAMON. I do not know that I catch you. You mean that you think their estimates of demand should be mandatory on the States?

Mr. COLE. No; no. Let me explain. If a point of order was made in the House, it would throw the appropriation out, because there is no existing authorization for it.

I gather from a number of statements of witnesses before that is work that they want some law to support.

If this committee should feel inclined to agree with what you have said here, and certainly what Mr. Hardwicke has said, that all of the States are not doing what they should in the way of preventing waste—and I think we can admit that there are some instances where criticism is deserved—we all want to lessen it as far as possible—do you agree with Mr. Hardwicke, that the Federal Government, through the proper agencies, is the logical place to vest that authority in order to detect it and give the States the benefit of their findings?

Mr. Hamon. I do not feel that the Federal Government should do anything more than it is now doing. I can see no reason for extending in any manner whatsoever the Federal Government's power, or authority, or duties, in connection with the oil industry. I think they are sufficient the way they are.

Mr. Cole. Well, the Federal Government does not have the power now to make the necessary investigations throughout the fields of the country to determine whether there is waste.

Mr. Hamon. Well, I cannot answer that.

Mr. Cole. You just said that they had sufficient authority.

Mr. Hamon. They do come into the fields, and of course, it has been my experience—we have cooperated with the Bureau of Mines whenever they make investigations of oil fields, and I know——

Mr. Cole. You do not know what authority they have?

Mr. Hamon. I do not know what authority they have, no, sir.

Mr. Cole. Whether they need any additional authority or not, you are not so sure?

Mr. Hamon. If they haven't any authority?

Mr. Cole. You would not give them any?

Mr. Hamon. I would not give them any anyhow.

Mr. Cole. You are pretty consistent on this point anyway. [Laughter.] All right, Mr. Hamon, that is all. Thank you, sir.

Mr. Hamon. Thank you.

STATEMENT OF HON. PHIL FERGUSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OKLAHOMA

Mr. Cole. The committee is more than glad to hear at this time one of the splendid representatives from the State of Oklahoma; a gentleman who is continually working in the interest of Oklahoma as he sees it in the problem now before us.

Mr. Ferguson, we are glad to hear from you.

Mr. Ferguson. Thank you, Mr. Chairman. I appreciate this opportunity to discuss briefly some of the problems of the petroleum industry and the manner in which they have been met by the action of State regulatory bodies supported by the domestic branch of the petroleum industry. This whole subject is of very great interest and importance to me since my own State of Oklahoma has led the way in the adoption of legislation for the prevention of waste and for the better conservation of our petroleum resources.

Petroleum means much to the State of Oklahoma. It is our most important crop. The rapid development of this State, the high standards of living, and the splendid type of its citizens have been due, in a very large measure, to the development of the petroleum industry in this State. The oil men found in petroleum a substance which had been useless and made from it some of the most useful products which the world has known. They took what was a liability and made of it our most important single asset. Land which would have had little value for any human use has, through the energy and the science of the petroleum industry, been made to yield large sums which have promoted our industrial and economic life and brought comfort and prosperity into the lives of many thousands of Oklahoma people.

In the earlier days of the petroleum industry in Oklahoma, long before there was any public recognition of the need for protecting this natural resource, the independents in the industry, on their own initiative, proposed and supported the first conservation measures to be written in the statute books of any State. There had been laws, of course, affecting the petroleum industry which had been passed by other legislatures, but the first bill intended as a conservation measure was offered to their legislature by the independent petroleum producers of my State. From the passage of that original conservation act, Oklahoma has continued to develop high standards for conservation laws and equally high standards for the administration of those laws.

The success of the Oklahoma conservation program, which was later adopted by many other oil States, was due to the fact that these measures were drafted by men who were close to the problem, who based their proposals upon actual experience rather than upon theory and who were able, through careful checking of the workings of the law to suggest to an attentive legislature amendments or revisions when these were necessary. Our statutes, therefore, have developed out of an immediate contact between the lawmaking body and the men in the oil fields.

Underlying the general theories of conservation legislation in Oklahoma, and in other States as well, was the idea of the prevention of waste. That idea was not forced upon the petroleum industry in Oklahoma by public opinion or by any pressure from without. These men did not want to see waste in the pools and fields which they were developing. It was to their own interest that wasteful production should be avoided so far as that was possible. Thus the personal interest of the petroleum industry ran parallel with the general interest of the people at large. It is only natural, therefore, that the original requirements for the elimination of wasteful methods came from the industry.

While Oklahoma was the pioneer in the adoption of conservation legislation in the effort to prevent waste, other oil-producing States have also adopted practical statutes which, like Oklahoma's own, have grown up out of the experience of men who are actually producing oil. Later States have profited by the experiments which Oklahoma and some early States have made and have written into their conservation laws the principles which their predecessors had worked out. In each case, however, the laws ultimately written upon the statute books while founded upon broad general principles have also been especially adapted to the conditions prevailing in that State. To this fact is due whatever success has been attained in the administration of these conservation measures.

The Federal Government has a definite part to play in the direction and development of the petroleum industry. Congress has sole control over one source of supply: Imports. That control is a vital element if we are to have a practical balance of supply with demand which is necessary in order to avoid wasteful overproduction. The Federal Government has been aiding the oil-producing States through the repeated enactment of the Connally hot-oil law which forbids interstate transportation of oil produced in violation of State laws. The Federal Government has authorized the Bureau of Mines to prepare and make available statistics whose use by State regulatory bodies has been of the utmost value. One other step it has taken is the authorization of the interstate oil compact. All these things the Federal Government and the Federal Government alone can do for us.

It is to the States, however, that the industry looks directly for more intimate aid. Each of the oil-producing States has a financial interest in the efficient production of its oil reserves. In many States taxes upon this industry furnish the greatest volume of public revenues. The local communities, counties and the States themselves look to their receipts from levies on petroleum as a major source of income. The state too looks to the petroleum industry to continue its employment, the high wages of many people (numbering over a million for the Nation at large) who find their livelihood in this industry.

Because of its nearness to the industry in its own borders, because of this direct contact, because many thousands of its citizens are financially concerned and therefore keenly alive to the conduct of the industry, State supervision has been increasingly effective in preventing wasteful methods, encouraging conservation and in promoting exploratory work for new reserves.

The administration's Federal oil-control bill which is now before the subcommittee of the House Committee on Interstate and Foreign Commerce appears to be largely built upon the theory of prevention of waste. According to testimony offered at the first hearings by that committee, it appears that physical waste is the type with which the bill is especially concerned. Waste is a relative term. Its meaning today is not the meaning it held 25 or 50 years ago. It may not be the same meaning which the word will hold 5 or 10 years hence. Waste, in the general thought of many in the industry, consists in the use of methods not in accord with the latest development of a constantly changing technique of production which may vary with the pool, the field or the State.

The States with regulatory laws have reduced waste to a minimum. Government witnesses so testified in the opening of the hearings on the administration's "petroleum conservation bill." Since that bill deals solely with the prevention of physical waste, it would merely duplicate the successful efforts now being put forth by these States. While there are States without regulatory laws and where wasteful production methods are being followed, it does not seem proper to establish Federal control of production in all the oil-producing States merely because one State has not, up to the present time, recognized its obligations and responsibilities.

While this bill attempts to set up certain standards or guide posts for the determination of waste, those standards are not universally applicable; neither are they sufficiently exact to furnish an adequate guide for enforcement of the act or a proper protection to the producer from improper administrative action. When so many engineers differ so widely in regard to many of the factors set forth in this bill, it would seem unwise to attempt by legislative fiat to establish certain formulas as though these could be scientifically determined.

Under State regulatory laws the rights and interests of those engaged in the production of petroleum are safeguarded. While sufficient power is given by those laws to the State officers, the exercise of authority over production is so safeguarded that rearly has there been a case for complaint. Furthermore, the fact that the administration of these laws is in local hands is another effective means of preventing a misuse of that authority. The administration's bill, on the other hand, does not set forth any clear limitation of the authority of the commissioner named in this measure. While court reviews are provided, the bill does not insure to the producer the standing he now enjoys under State conservation laws.

A provision in the bill for a Council on Petroleum Conservation merely proposes an annual meeting of certain State officers, some producers and some teachers who would be authorized to confer with representatives of the Federal Government but does not give them any authority. So far as effective action goes, an unofficial or private gathering would have all the power which this proposed Council would possess under the law.

There are some broad general principles which apply to the petroleum industry everywhere, regardless of local conditions. We usually think of those broad principles when we discuss such ideas as a national program for conservation. Here we face a temptation to generalize which may cause much misunderstanding and lead us into situations which are harmful. We are reading much lately about the national petroleum industry. There is no such thing if by this we mean some unified group which operates over the country. The national petroleum industry is made up of thousands of persons and firms each with its own problem and each with its own responsibility. We talk much about the producer. Actually it takes thousands of men and firms to make this composite picture of the producer. In any attempt to work out a national program, we must not be misled by the imaginary figure of the industry or the producer which we have thus built up. If we attempt to make our scheme fit the circumstances of some person or organization in the industry whom we might consider as typical, we will find that same scheme entirely inapplicable to thousands of others.

One of the outstanding difficulties in the drafting of a bill such as the administration's Federal oil control bill is the impossibility of finding a formula or formulas which will fit all these varied types, each of which has its own peculiar problem. Many oil companies find it necessary to engage a large staff of able men whose training and experience equip them for attempting the solution of the peculiar problems which that company may face. Through efforts like that, the industry has slowly but steadily advanced. One weakness in the Federal oil control bill lies in the fact that it puts in the hands of one man the responsibility for solving all these multifarious problems and gives him the authority to compel individual concerns to accept his findings.

By proposing this "petroleum conservation bill" the administration has done the petroleum industry a service. Out of the widespread and general discussion there has come much light upon the problems of the industry and upon its progress in their solution. Many are only acquainted with the character of conservation in their own communities or States. The Government has through its witnesses given to us a very clear picture of the success which the industry and the oil States together have achieved in the elimination of waste. This should encourage those who are working for improvement in the administration of State regulatory laws or for the adoption of such measures in States which do not have them. This discussion has taught us one thing more. We now know there is no magic rule by which we may solve those puzzling problems which are a feature of the petroleum industry. That industry is a growing living thing. It does not remain static. Its problems change from day to day, from week to week. They can only be solved by a kind of opportunism, by meeting the issues as they arise, always realizing that none of these will stay solved but will in their turn produce new problems.

For these reasons I feel that the present bill is unnecessary; that it would impose a burdensome control of production in States where the local authority is functioning efficiently; that it would discourage initiative and that it would create a new extension of Federal authority which might have very undesirable effects upon our system of government. I hope that the committee will not recommend the adoption of legislation of this character.

Thank you, Mr. Chairman.

Mr. Cole. Thank you, Mr. Ferguson.

Possibly some of the group would like to attend the session of the House for a little while. The Farewell Address of Washington is to be read. While we are working all day today, on a holiday, I think we might take a little time off for that purpose, and I think it would be well to recess at this point until 1:45.

(Thereupon, at 12:05 p. m., a recess was taken until 1:45 p. m. of the same day.)

AFTERNOON SESSION

(The committee reassembled, pursuant to the taking of the recess, at 1:45 p. m., Hon. William P. Cole, Jr., presiding.)

Mr. Cole. The committee will be in order. We will hear Mr. Moore.

STATEMENT OF E. H. MOORE, TULSA, OKLA.

Mr. Moore. My name is E. H. Moore. I live in Tulsa, Okla. I have been actively engaged in the oil-producing business for about 25 years in the Mid-Continent field. I have drilled a considerable number of wells in Oklahoma, Kansas, Texas, Arkansas, Louisiana, and California. I have made several discoveries in my efforts as an operator in various portions of the oil fields, and I have produced a considerable quantity of oil over the years. I have financed my operations mostly from what profits I could make in the business, and what bank loans the success and soundness of my business seemed to justify, together with some participation from investors.

My statement is short, and will be addressed to that phase of the oil industry which has probably been little discussed or considered, and that has to do with the discovery of future supplies. I refer to the role of the discoverer of new fields, and I shall attempt to state my opposition to this bill, or any of like nature, as to the effect upon anyone engaged in exploratory work, or wildcatting.

I say at the outset, however, that I claim to be one of the pioneers in the prevention of waste, and conservation. I conferred with those, and rendered some aid, in the preparation of the first statute enacted in the State of Oklahoma for the prevention of waste, and conservation, and that statute was one of the first for the prevention of waste, both economic and physical, and conservation of reservoir energy. I have been in attendance at many meetings in Oklahoma, Kansas, and Texas in the consideration of allowables, and allocations of oil from the various flush fields under consideration. I know it to be true that the producers as a whole have conferred together and concurred in a program that had to do with an orderly development and an economic procedure, both as to manner of production and the amount, and the regulatory bodies of the States have listened and sought the counsel of producers, both technical and practical members of the industry, and have regulated in a cooperative way the business in a satisfactory manner. Improvements will continue to be made as scientific application of principles from time to time develop.

It is true, of course, that this is not perfect. It is also true that in at least two of the major oil-producing States, to-wit, California and Illinois, there have as yet been no conservation statutes enacted; but in the State of California, where I have had an opportunity to know something about the manner and method of development and production, the industry has acted in such a way as to be reasonably orderly and economic. I should say that the leading interests in California, both major and independent concerns desire, and will ultimately procure, the passage of conservation statutes and regulatory bodies set up thereunder, and we have hope that the State of Illinois will do likewise before any substantial permanent injury may occur there.

Now I have tried to make it plain that I am one of the great majority of factors in the business that thoroughly approve of conservation, and I assert as emphatically as I know how, after considerable experience, that I believe in conservation and prevention of waste, but the point that I want to make against this bill is that we don't want a duplication of agencies, and we don't want a Federal agency, for reasons that have been assigned over and over again, logically and convincingly, by those who were better prepared to state these principles than I am. A Federal bureau, in my opinion, would retard our progress. It would discourage individual initiative, and result in a dwindling of known oil reserves. The opposition to a Federal bureau is reasonably taken because of the impossibility of administration on account of remoteness and unfamiliarity.

I think it would be pertinent at this point to state an instance that came within my experience in the early stages of the oil code. I had at that time drilled a wildcat well, after the usual difficulties besetting such a venture both from a financial point of view and mechanical difficulties, which well was located some distance from a pipe-line connection, but at which time purchasers were willing to make connections and run oil, but under the construction of the Federal authority set-up it took months to find an interpretation and procedure to be followed that gave the purchaser the right under the procedure sought to be followed to make connection and run production from the well.

Mr. Cole. Does that happen by any chance to have been the Santa Maria field in California?

Mr. Moore. No.

Mr. Cole. You have some production there.

Mr. Moore. Yes. It was perfectly apparent that this well was a pool-opener, but before I could lawfully proceed to drill other wells, as provided for under lease requirements, I had to spend a great deal of time and was beset with a great deal of confusion as to how to lawfully and in an orderly way proceed. I had to procure authority from various agencies that had been set up under the code in the State of Oklahoma, regional offices, two or three different agencies located in Washington leading up to the Administrator, and to follow that out it was necessary to employ counsel in Washington to follow this through its various clercial ramifications, to the end that I might procure the legal authority to do a thing that it seems to me should have been my obvious right to do. Since the invalidation of the code and all authority set up thereunder, this pool has been developed, and I think I may say that it has been developed and produced in a scientific, conservative manner that is exemplary, and it has yielded approximately 100,000,000 barrels of oil, and resulted in economic rehabilitation, employed millions of dollars in labor, afforded opportunity for good living conditions to many families, and has resulted in the payment of millions of dollars in taxes to the State and Federal Governments.

It is axiomatic, I think, that we must continue to find new fields, and in my opinion the best way to find them is the way that has been used—go out and look for them. The independent is the great finder of oil, because he has the boldness, the initiative to look for it. To be specific, there were 287 new pools found in 1939 in Oklahoma, Kansas, Texas, Louisiana, Arkansas, New Mexico, Michigan, Illinois, Nebraska, Kentucky, Mississippi, Wyoming, and Montana, as shown in the January 25, 1940, issue of the Oil and Gas Journal, and the January 29, 1940, issue of the Oil Weekly. Of the 287 new pools listed, 224 were found by the independent producer and wildcatter. The reason why they lead to the discovery is quite simple. They lack the inhibitions that surround the large companies. Put any man in charge of the affairs of a large corporation, and if he is worthy of the trust imposed upon him by the stockholders he becomes conservative and cautious. He takes as few chances as possible. He is such a man as you would want to manage your own investment. The independent is not so bound. He may have a few stockholders, but they have invested with a full understanding that there are risks in the partnership. He has no stocks listed on the exchange, and no bonds. He is free to go ahead and finance in any legal way he can any venture he decides to engage in. He uses the scientific aid that is available, but he may proceed in disregard of the scientific findings, and many a valuable addition has been made to the oil reserves of the Nation because some independent drilled on the basis of a "hunch," or maybe because a fortune-teller told him where to drill. Please do not understand that I advocate or practice reliance on the occult. I make the point that discovery of new fields is subject to no rule that can be laid down. When we get into the study of financing discovery we find a condition that must be experienced to be believed at all. The financing of discovery is made up of so many parts that it cannot be reduced to a formula. All parties concerned know the hazards of wildcatting.

The only public question involved is that of promoting the public welfare by making discoveries. It is not unusual to find 9 out of 10 wildcats dry in a given year. The chance of success now is greater than before geology and geophysics attained their present status, but the possibility of finding new fields is still filled with hazard. The dry holes that have been drilled are of value to the industry in that they yield information as to structure and character of underground beds, but the comfort which the driller derives from a dry hole is spiritual only. The realization that he has added to the geological lore does not replenish his bank account.

I can imagine nothing more certain to bring on the long-predicted shortage of petroleum than Federal regulation of discovery efforts. It may be argued that there is nothing implicit in the bill before you that touches wildcatting, but as is usual with statutes of this character, it will contain a vast reservoir of undefined power, and that power would be asserted. It would be asserted on the slender theory of national defense, public welfare, and effect upon interstate commerce. There would be scrutinized every wildcat location. It would be examined from a geological standpoint. It would be considered from the standpoint of desirability of unitizing the area of the proposed wildcat. It would be found that a great majority of the existing leases are held by major interests. It is a common practice for industrious individuals to make trades with major interests for a portion of the acreage held by them for the drilling of a well.

It is a common practice for these individuals to combine their resources to finance the venture, and it is by such practices that the great percentage of discoveries are made by the independents in such proportion as hereinabove set out. If it were regulated by the unwieldy and inefficient bureaus of the Federal Government it would be so discouraging to such individual initiative that it would probably never be put into effect. It would increase his financing obstacles. The unit operation is all well and fine in theory, but there are so many varied interests, such as royalty interests, small leaseholders, the disposition of major concerns to dominate, that it is more of a theory than a practical possibility. The major concerns would not think of drilling a well unless they had the approval of their scientific department. If it had been left to the reliance of science, and Federal bureaus that would necessarily make application of such principles, the great East Texas oil field would yet be undiscovered. The pool that I just made mention of heretofore is one of the major pools in Oklahoma today, and has produced a vast quantity of oil and will no doubt produce as much yet, was condemned by science.

I want it understood that I do not hold lightly the work of scientific men. I want to say that they subscribe very largely to the views that I have expressed concerning the fortuitous nature of exploration, as is evidenced by the closing paragraph of an article by A. I. Levorsen, one of the foremost petroleum geologists. I quote from this article, which appeared in the February 1940 issue of the Independent Monthly, the official publication of the Independent Petroleum Association of America.

> However, the fact that there are probably huge reserves of undiscovered petroleum does not mean that they will necessarily be discovered in the amounts and at the rate necessary to keep pace with the demand. It is conceivable and highly probable that within any 5- or 10-year period there might be a slowing up of discovery due to chance, unfavorable economic conditions, or limiting restrictions of various kinds. By the same token, we might equally well expect to increase in discovery by a reversal of any or all of these factors. Reasoning in such fashion as this, it seems to this writer there need be no more fear of scarcity of discovery now than there was 10 or 20 years ago, when the outlook was just about the same. This becomes increasingly true if the wildcatter, the little independent and the individual be permitted to continue his part in the discovery process. It is such as he that defies orthodox thinking and goes out where everyone else says it isn't and there he finds it. As long as he can keep doing this there should be little worry about our future supply of petroleum.

To make such a law as we are considering here come within the power granted by the Constitution, it is asserted that the national defense, the public welfare was threatened, as against the reason for assuming authority. Most intelligent students and analysts who have spent years are now convinced there is no danger of a scarcity. We have not only an ample supply of oil, but we have a great excess, both in this country and neighboring countries. There has been a continuing improvement in manufacturing processes, and improvement in motors for power use, that minimizes substantially the volume of oil, and there has been a continuing improvement in technique for deeper drilling, for repressuring, so that many millions of barrels of oil will be recovered from existing fields that only a short time ago were thought near exhaustion. It is not true that the country is threatened with a shortage of oil, nor is it true that it is likely to be, so the reason for Federal administration on the basis of national defense is not sound nor justified.

That the country can rest assured that there will be a continuing ample supply of oil by new discoveries is based upon the assumption that no such restrictions will be imposed upon the industry as is proposed and threatened by the pending bill, or by the setting up of Federal agencies and bureaus.

Some 5 years ago a bill was introduced in the Congress having for its purpose the nationalization of the industry, known as the Thomas-Disney bill, and a committee of the House, consisting of your present chairman, and Congressmen Pettingill, Kelley, Wolverton, and the late Representative Mapes, made an exhaustive study of the need for the bill, and came out with a report that resulted in the passage of what is known as the Connolly bill. The industry as a whole approves that bill; it approves that function of the Federal Government, because it properly prevents the movement in interstate commerce of oil produced in violation of State authority. The regulation of the business needs to be left in the States. There is now a cooperative entity known as the Interstate Compact, authorized by Congress, with persuasive and advisory powers, that does a useful function, in the opinion of the industry, in which I join.

Mr. Samuel Pettingill, a former Congressman from Indiana, and a former member of the committee, in his book, in a critical discussion of the conduct of so-called big business, asserts that the answer to the misconduct in big business is not big Government, and I assert that the deficiencies and inefficient regulation by the regulatory bodies is not to be cured by a statute establishing bureaus for the administration of the oil business by big Government.

Mr. COLE. Mr. Moore, the reason that I asked you if that was the Santa Maria field in California is that I recall when we were there recently we were told, while we were traveling through the State in some conversation that I had that—it was not a part of the testimony—but that was discovered by a Mr. Moore who had developed certain productions in the San Joaquin Valley, and you are the gentleman, I assume?

Mr. MOORE. I am.

Mr. COLE. Is that a heavy oil?

Mr. MOORE. It is about a 17 oil.

Mr. COLE. Have you had any difficulty in marketing it?

Mr. MOORE. I have not sold a barrel in 6 months.

Mr. Cole. Are you producing it?

Mr. Moore. I am not.

Mr. Cole. Do you produce any?

Mr. Moore. I did; yes.

Mr. Cole. Did you ever have any difficulty marketing it?

Mr. Moore. I only had one outlet there and that was with the Union Oil Co., and we have not had a very encouraging market.

Mr. Cole. What have you done with the oil produced for which you had no market?

Mr. Moore. I sold all I produced.

Mr. Cole. You did not produce any that was not sold?

Mr. Moore. No; nothing except field storage, four or five thousand barrels, probably.

Mr. Cole. Four or five thousand barrels?

Mr. Moore. Something like that.

Mr. Cole. That is in storage?

Mr. Moore. It is in field storage.

Mr. Cole. What do you mean by field storage?

Mr. Moore. Well, I mean in field tanks.

Mr. Cole. Open tanks?

Mr. Moore. No; no, in vapor-tight tanks, steel tanks.

Mr. Cole. In covered storage?

Mr. Moore. In steel tanks.

Mr. Cole. Any in open pit storage in that area?

Mr. Moore. No; there is no oil in open storage.

Mr. Cole. I did not see any there.

Mr. Moore. No; none except what is necessary while we are bringing a well in.

Mr. Cole. That is all; thank you.

Mr. Moore. Thank you.

Mr. Cole. I understand that Mr. Buttram does not want to testify this morning.

Mr. Brown. Mr. Buttram will come on later. He has not had a chance yet to finish his statement. We would like to have him come on later.

Mr. Cole. All right, Mr. Lovejoy, if you are ready.

Mr. Lovejoy. I will be glad to go on now.

Mr. Cole. Mr. Fell is next in order. It has been suggested that since Mr. Fell is going to discuss market demand that there are some other members of the committee who have shown, during the hearings, considerable interest in market demand by the questions they have asked and I think it is likely that there will be a full committee meeting tomorrow morning. Mr. Holmes and Mr. Wolverton have been in the transportation conference all morning is the reason they are not here.

STATEMENT OF JOHN M. LOVEJOY, OF NEW YORK, PRESIDENT, SEABOARD OIL CO., FORMER PRESIDENT, AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

Mr. Lovejoy. My name is John M. Lovejoy. I am president of the Seaboard Oil Co. of Delaware and have been in the oil producing business for 26 years. I graduated from the Columbia School of Mines in 1911; and in 1936, I was president of the American Institute of Mining and Metallurgical Engineers. It is my purpose to discuss sundry high lights of the testimony offered by Government officials with respect to current conditions in the oil industry and H. R. 7372. Your committee has listened patiently to a great deal of testimony on a difficult and complex subject. However, I hope in a brief review to focus your attention on certain important aspects of the matter.

In his opening testimony Secretary Ickes declared that he had asked the directors of the United States Geological Survey and the United States Bureau of Mines to supplement the prepared statement that he was then presenting "with full reports on present and recent instances of avoidable waste in oil and gas production." This reveals an astonishing state of affairs. Can it be that this highly important bill, involving a virtual indictment of one of the Nation's greatest basic industries, was being advocated by the Secretary of the Interior before he had all obtainable evidence as to whether wasteful methods were practiced or waste actually existed? The answer seems to be that he did not, since the evidence submitted by Government experts in November contains little if any evidence of waste in substantial or material amounts. On the contrary, their testimony is replete with highly complimentary comments on progress made toward waste prevention.

On February 8, on the eve of the industry's presentation the Secretary of the Interior has finally offered what purports to be evidence of this nature—but that does not alter the amazing conclusion that the Secretary has at least prematurely advocated this legislation.

It is also strange to find that important Government officials, whose duties suggest that they should be thoroughly posted, testified that they knew little or nothing of the bill, its primary purpose, or its parentage. Hugh D. Miser, in charge of the section of fuels of the United States Geological Survey, disclaims responsibility for authorship. H. A. Breakey, Petroleum Economics Division of the United States Bureau of Mines, says that he had never seen the bill. Alfred G. White, Chief Economist of the United States Bureau of Mines, could not explain why the legislation had been proposed. David Hudson, Assistant Solicitor of the Interior Department, admitted his inability to answer questions as to the policies behind the bill. It might have been helpful to Mr. Hudson in drafting the bill if the thoughts that he was to clothe with legislative phraseology had been more clearly explained by its sponsors—whoever they may have been.

Apparently to create an impression that there exists some connection between this legislation and the important and appealing subject of national defense, Admiral H. A. Stuart and Col. Harry K. Rutherford were called as witnesses.

The admiral expressed the opinion that the day is near at hand when oil can no longer be obtained readily and cheaply in the United States. He testified that the Navy now consumes 9,000,000 barrels of fuel oil per year; and estimated possible demand in wartime at as much as 50,000,000 barrels. This, incidentally, is less than 4 percent of the current rate of crude-oil production. Colonel Rutherford estimated that Army's needs under war conditions at 12,000,000 barrels, also an insignificant percentage of current production.

Admiral Stuart's views as to exhaustion of petroleum supplies are in serious conflict with the testimony of Mr. Miser. The latter said:

"They are not going to quit finding oil today or tomorrow; they are going to find oil as long as we live and our children live and even their children." He pointed out that in the 5-year period ending January 1, 1939, 9.5 billion barrels of oil had been discovered in the United States against a production of 5.5 billion barrels. For your information, I may interject here that the Oil Weekly issue of January 29, 1940, estimated a present proven reserve of 18,751,050,000 barrels—an all-time peak. At the end of 1938, the corresponding figure was 17,348,164,000 and at the end of 1925, reserves were estimated at about 5,000,000,000 barrels.

The admiral advocates further additions to the already substantial reserves now directly held by the Navy. I do not express any opinion as to this but I do wish to point out that in the event of war the entire oil resources of the country would instantaneously be available for the national defense. Incidentally, in the event of war, a tremendous quantity of oil normally consumed for peacetime purposes could be diverted to the use of the Army and Navy.

I do not hesitate to say that the possibility of any stringency in the supply of petroleum and its products for the armed forces of the United States, as far ahead as we may reasonably look, is too remote to be given serious consideration. Furthermore, the Nation's production, transportation, and refining facilities comprise ample excess capacity to meet the needs of any possible emergency for the national defense.

Two members of the National Resources Committee, namely, Ralph J. Watkins and Glen S. McGlaughlin, submitted statements to your committee. This testimony has been studied carefully because of the reference by President Roosevelt in his letter to Chairman Lea of your main committee to the report on Energy Resources submitted by this committee to the Congress.

These gentlemen refer to "grave, avoidable waste" in the industry. They say: "Rarely are oil and gas produced with the aim of recovering the maximum proportion of the reserve." They give no evidence whatsoever substantiating these statements. And it should be evident that the legitimate self-interest of the oil producer refutes any such statement. Mr. Watkins has served on the faculties of several universities and his training has been in economics. Mr. McGlaughlin is assistant professor of economics at Hunter College. Does either of them qualify as an expert to give competent testimony as to waste in the petroleum industry? I submit they do not.

Appropos of compulsory unit operation, Mr. Watkins states:

> The application of such scientific unit control depends on the complete displacement of the rule of capture by a thoroughgoing law of ownership in place, which would allow to each claimant his equitable proportion of oil and gas in the common reservoir which underlies the land he owns or controls.

This may sound reasonable in the seclusion of classroom discussion; but it involves the complete discard of our fundamental laws of ownership of oil and gas, and the substitution therefor of Government ownership by appropriation or confiscation. As a practical matter it is out of the question. Because of the migratory nature of oil and gas and the large number of immeasurable forces involved, no formula can be devised to establish an equitable apportionment of oil and gas to each claimant. The advantages of scientific unit operation are readily apparent; but it can be achieved only when operators are able to agree among themselves to arbitrary bases for the division of the products from a field. Unitization must rest upon consent—not compulsion. Mr. Ickes admits this when he says: "I think it would be going too far to compel contractual relations among them [referring to operators in a field] and I doubt whether the courts would sustain such a power." As a matter of practical fact, most of the benefits of unit operation are already being achieved where cooperative plans involving orderly development, wider well spacing, ratable takings, and so forth, are in effect.

My discussion up to this point has dealt with sundry aspects of H. R. 7372. I now come to the major contentions of proponents, namely:

(1) That excessively wasteful practices presently exist in the production of oil and gas;

(2) That Federal control of this vast and complex industry is necessary to correct such alleged wasteful practices.

I should like to examine briefly the testimony which particularly applies to these aspects of the matter.

WASTE

As an engineer familiar with oil field technique and accustomed to weighing facts of this character, I have failed to find any material evidence in the testimony presented in November or the second installment thereof, that supports the broad allegation of excessively wasteful practices. Would it not be natural to expect that a charge so serious, involving one of the country's largest industries, should be supported by concrete and overwhelming evidence? If there existed in the industry waste of such magnitude as to call for Federal legislation it would surely be reasonable to expect that the detailed testimony of Government experts before your committee last November would have disclosed specific and undeniable proof of such waste. On the contrary the record is replete with expert testimony that tends to refute the charge.

Mr. Miser said that he was not qualified to express an opinion as to whether drastic action was required now as compared with the condition 5 years ago. He further states:

> The petroleum engineer is meeting energetically the challenge to recover the 65 to 85 percent of oil remaining in the ground after a field no longer yields oil by the older methods of production. Each year witnesses the improvement and extension of recovery methods, such as acid treatment and repressuring by the introduction of gas, air, and water into the oil-bearing zones.

As I review the testimony of Government experts, I got the impression that they recognize the inherent problems connected with oil and gas production, and commend highly the progress which the industry has made in solving them.

Messrs. Miller and Shea, of the United States Bureau of Mines, in a report dated November 7, 1939, filed with this committee, said:

> In every branch of the oil-producing industry—exploration, development, and production—the executives, technologists, and operators have cooperated in developing and applying improvements in equipment and technique and in attaining more efficient recovery of oil to meet the continually increasing demand for oil, with no increase to the consuming public in price of petroleum and its products.
>
> A review of developments and achievements in methods and processes constituting phases of technology in the petroleum industry during the past 5 years

brings out the significant conclusion that the overwhelming trend in the industry is toward application of science and engineering in exploration, drilling, and producing operations.

The industry does not claim that there is no waste in its operations. Waste attends any industrial process. Mr. Miller, quite correctly, has said:

> I would say definitely that it cannot; the oil industry cannot operate without waste, any more than any industry can be operated without causing a certain amount of waste. I cannot recall an industry in which there is not some waste of raw material, and in the oil industry oil and gas are the raw materials.

I submit that no case has been made for the contention that the production of oil and gas is accompanied by flagrant, unreasonable waste.

I would like to insert here, Mr. Chairman, a short discussion in regard to the report filed by the Secretary on February 8, which has to do primarily with waste of gas produced with oil, and I want to try, if I can, to get over the idea to you gentlemen that most of this gas is unavoidably produced with the oil. Now, if this gas has to be produced in order to get the oil to the surface of the ground it is not waste, as it has already performed its primary function in lifting the oil—it is marketed if it can be marketed, and on the other hand, if there is no market for it, it has to be burned and blown to the air. The only way to cure that, that I can see, is to shut in the oil wells that do not have a market for their gas.

Now, it seems to me that as a matter of choice between two evils, that it is much better to permit gas necessary to lift the oil but unsalable to continue to be blown to the air rather than shut the oil wells in, thus creating as a matter of fact a real shortage of oil, resulting in higher prices to the consumers.

You will recall that Secretary Ickes defined conservation as being a prudent use of our natural resources, by the present generation, with a view to saving all we can for future generations. He probably would define waste, therefore, as being any production of oil and gas in excess of that required for prudent use. A little later in this testimony I shall deal with the implications of that definition. But from an engineering standpoint, waste results from methods of exploitation, that fail to yield, ultimately, the maximum quantities of oil and gas that might be recovered by the application of the best technical methods known at the time. It has no direct connection with prudent use.

However, it should be pointed out that what is "waste" and what under a given set of conditions constitutes the most efficient operating methods, is exceedingly difficult to determine, and, in many cases, is a matter of individual opinion among equally competent and experienced engineers. This fact, which has a direct and important bearing on the practical enforcement of the proposed bill, is recognized by several of the first witnesses that appeared before the committee. For instance, the following is a quotation from the memorandum prepared by the Petroleum and Natural Gas Division of the United States Bureau of Mines:

> As discussed in the forward part of this report, the concepts of reservoir behavior are in a formative stage, and much is to be learned regarding all the factors constituting efficient use of the natural forces derived from the energy in the system. It has been shown that underground physical waste of oil and gas is difficult—and sometimes impossible—to determine until after the damage has been done. Evaluations of so-called energy waste are far more complex. Accordingly, the cited

examples are indicative only of what engineers and others are trying to find out concerning better control of reservoir behavior. It would be impossible, with the present state of knowledge, to tabulate the fields that are being operated contrary to the best use of the reservoir energy.

The following is a quotation from the report of H. C. Miller and C. B. Shea of the United States Bureau of Mines:

> It would seem to one not familiar with the technology of oil production that petroleum engineers should be able to tell more definitely than they have in the past what percentage of oil is being recovered from reserves now undergoing depletion. Petroleum engineering, however, is relatively a new science, and those engaged in petroleum work are handicapped because they are dealing with exceedingly complex fluids in reservoirs they can "see" only through the records of scientific instruments and the results of research. Progress leading toward more accurate estimates of oil recovery efficiencies definitely is being made, and the accuracy of the estimates is improving in direct proportion to the increase in the fund of knowledge now being accumulated in the course of studies of gas in solution in oil, connate-water content of oil-bearing sand, and other characteristics of reservoir fluids and reservoir rocks.

Also Mr. Miller has said:

> Proper well spacing, for example, is still a highly controversial subject. Also as to well completions, engineers might disagree on the best methods of completing the wells in particular fields.

Proponents of the bill attempt to create an impression that extraordinary waste exists by citing practices long since discarded by the industry. Reference is made to a number of fields developed 10, 20, or 30 years ago. These in the light of present knowledge were exploited wastefully, but nothing can be done to correct conditions in such fields now. However, I am prepared to assure you that, were these fields being developed today, all the natural forces within the reservoir would be effectively utilized regardless of whether laws required such procedure or not. Operators have become educated in these matters during the past decade; and they are fully aware of the advantage of sound engineering practice. As Mr. Miller has said in response to a question by Mr. Pearson:

> I would say that on the whole the industry is practicing conservation. I do not believe any operator really wants to waste oil or gas if he can possibly avoid it.

The broad assumption by certain Government officials of profligate waste, and their effort to plant that idea in the public mind is well illustrated in the radio broadcast of October 7 sponsored by the Department of the Interior. This will be discussed by another witness, but I cannot refrain from commenting that such propaganda is misleading, destructive, and grossly unfair to a great industry which has made such substantial contributions to American civilization.

One of the most interesting statements as to waste is that by Mr. Miller. He enumerates three types of waste: Physical waste of oil and gas; waste of energy; and economic waste. These, he says, "Are so interrelated and interdependent, that each involves and influences the other." He adds:

> Engineers recognize the great difficulties that surround the evaluation of "waste" of reservoir energy, because its transformations are so complex that its "availability" on a strictly thermodynamic basis is not necessarily an indication of its usefulness for doing needed work.

And he concludes this portion of the report by saying:

> Therefore, a tabulation of fields in which waste has or is occurring in some degree and to which the provisions of H. R. 7372 are applicable would be either all inclusive or of doubtful value.

These remarks confirm statements of the best engineers in the industry that waste is relative and cannot be determined quantitatively with precision. Much work was done by engineers of the industry in the preparation of the surveys already submitted to your committee; and the conclusions of these men coincide with those of Mr. Miller's when he said:

> I would say that on the whole the industry is practicing conservation.

Mr. Miller cites various types of waste and explains the many complexities involved. He says:

> Progressive operators are trying to overcome all wasteful practices, knowing it is money out of their pockets to let them continue.

Even Secretary Ickes adds his tribute to the progress in technology made by the industry when he says:

> Technologists have been successful in developing and testing improved methods for finding and producing oil. This work is a splendid contribution to the achievement of American science.

To sum up this phase of the discussion, the record shows that phenomenal progress has been made by engineers and technologists in the development of methods for recovering the largest possible proportion of the oil in a given pool or field; that the industry as a whole is taking the fullest possible advantage of these improved methods; and that the physical waste of oil and gas is close to the minimum now attainable. When still better methods are found the industry will adopt them promptly.

I would like here, Mr. Chairman, to add a few remarks in relation to the matter of waste and the difficulty in evaluating it.

Mr. Cole. All right, sir.

Mr. Lovejoy. You have been patient enough to listen to the reports of our engineers who have made a so-called waste survey of the entire United States. I would like to emphasize the fact that we have made every effort to evaluate the extent and degree of wasteful-practices surveys for the benefit of your committee in its consideration of this matter.

You perhaps were struck yesterday and the day before with the testimony of two of our engineers indicating a sincere difference of opinion as to the application of recognized principles so as to prevent waste that might be created by improper use of reservoir energy.

I have been conferring with these engineers for the last 2 months in the preparation of this work, and I can assure you that while there is agreement as to principles there is no meeting of the minds of engineers in respect to evaluation of waste.

I interject these remarks to emphasize that point to you. Another point that I would like to bring out is the difficulty of any sort of a standard procedure for the production of oil. In order to give you his ideas as to a quantitative appraisal, Mr. Schilthuis has offered to you some figures in an attempt to evaluate waste. He specifically qualifies the figures in his report. You will notice by careful reading that they are limited to only certain types of fields in the particular area that he covered. They are not supposed to cover other types of fields.

He attempted to develop a yardstick for waste evaluation to apply to what he called an average oil field; but I submit to you gentlemen that there is no average oil field. Every one is different and has to stand on its own feet. However, his yardstick clearly shows the relatively insignificant amount of waste in his area.

There is no complete agreement today between groups of engineers as to the amount of waste created by rapid production as compared to oil fields. For example, the Illinois fields which do not have a demonstrated water drive are quite different in their reservoir conditions from the fields in the Southwest.

Some engineers feel that the rapid production in Illinois is creating considerable waste and others equally competent do not think that rapid depletion of that type of field makes very much difference in terms of ultimate recovery.

One other point that I would like to mention is the practical difficulty of Federal administration of the production of oil wells. Today when a new field is discovered, a hearing is immediately held by the State regulatory body. Practically all of the information which is listed in H. R. 7372 is brought up and discussed at that preliminary hearing. After all pertinent information has been submitted and studied, a drilling and spacing pattern is adopted, and regulations as to casing and perforating and other things are outlined.

It seems to me that if that had to be done through a Federal supervisor instead of the State regulatory body, it would present an almost impossible situation.

From my experience in the business I have found that the Federal Government does not delegate much authority to its field agents, and I do not know of any reason why we should expect to change. When anything important really comes up, the only answer is to come to Washington for a final hearing.

In the end, I feel that Federal regulation would necessarily have to be dictatorial and arbitrary and the final result would be to hold back progress rather than to advance it.

I would like now to discuss some other aspects of this proposed legislation.

FEDERAL CONTROL

In view of the inability of proponents to establish a primary thesis of material waste in the production of oil and gas, further discussion seems unnecessary. However, without conceding the existence of the malady they desire to cure, it seems worth while to comment on the remedy they propose.

Discussing the proposed bill, Mr. Hudson, who drafted it, says:

> The investigation and determination (as to waste) are to be carried out under a definite formula laid down by the Congress.

Mr. Hudson puts things in the bill which are not there. There is no definite formula laid down, nor is there any complete definition of waste.

Secretary Ickes states:

> The bill is designed to encourage and assist the States in the prevention of waste; not to restrict or limit their action in this accomplishment. * * * The regulatory provision of the bill would apply only when investigation proved as a fact that there was waste as defined in the bill.

As to his first point—the thesis of a Federal law superimposed over a State law is not sound—the operator cannot serve two masters. It seems obvious that, eventually, instead of supplementing State laws, this legislation would supplant them. And as to his second point—at best, waste is a matter of opinion, and, under the bill, the opinion of the Commissioner is final. It would be exceedingly difficult to prove waste as a fact at any time.

Those who drafted the bill were not unaware of the difficulties arising from the variety of definitions of technical terms and differences of opinion among qualified engineers on sundry technical points. Consequently, they included certain "escape" clauses in the bill which permit the Commissioner, under the direction and control of the Secretary, an unlimited right to define technical terms. For example, section 5 directs that in making his determination of physical waste and waste of reservoir energy, the Commissioner shall include certain specified factors; but there is no limitation placed upon him as to other factors, and presumptively he could include any others which in his sole discretion might seem pertinent. You will further note that his findings of fact have the force of law. This does not agree with the testimony of Mr. Hudson when he says:

> Under the standards laid down in the definition of waste in the bill, it is the duty of the Commissioner to apply the facts found by the investigation in the fields to that definition, and to arrive then at the determination as to whether those facts constitute, under that definition, what has been determined in the bill to constitute waste.

In view of the broad powers conferred on the Commissioner (who functions under the direction and control of the Secretary of the Interior), it is possible or even highly probable, that in a short time economic aspects of the matter would assume grave proportions. And I want to emphasize the fact that under the bill the real mandate to the Commissioner is to prevent waste. He can do most anything in the world that he wants to to accomplish that purpose.

Mr. White, chief economist, Petroleum Economics Division, Bureau of Mines, readily agreed in his testimony that the market price of a product is a corollary to the control of its rate of production. His discussion was interesting, frank, and intelligent. Incidentally, he disclaimed any knowledge of an objective for the bill beyond that of maintaining the best engineering practices in production.

The colloquy which developed between Mr. Wolverton and Mr. White is most illuminating:

> Mr. WOLVERTON. You say that the bill, in your opinion, relates to the subject of production. Would you say, as an economist, that limitation of production has a direct effect on the price charged the consumer?
>
> Mr. WHITE. Undoubtedly, limitation of production would have an effect on price, in my opinion. Of course, the effect might be to raise prices, or to stabilize prices, or to prevent decrease in prices, either one.
>
> Mr. WOLVERTON. In other words, production does have a direct relation to price?
>
> Mr. WHITE. The quantity of production would have, I should say, a direct relation to price.

After further discussion, Mr. Wolverton made this statement:

> Mr. WOLVERTON. The answer that you have given has stated as well as any I have heard in the past 5 years a justification of this legislation from the standpoint of stabilization; but, so far as I am concerned, it seems the emphasis that is placed on conservation is, to some extent, a cover for stabilization and the necessity of stabilization of price you have set forth; but when you speak of a natural resource that is being depleted—and we are told over the radio in very dramatic fashion and by prearranged story of a doctor receiving a call, which he could not answer because Bobby at the gasoline station said there was no more gas, as the eventual thing that will happen if we do not have conservation. It strikes me that is going a long way to show the need of conservation as a basis for stabilization of prices.

Gentlemen, I think that this is getting down to essentials. There can be no arbitrary limitation of production without an inevitable effect upon price.

If the rate of production, fixed by an omnipotent Commissioner is greater than current demand, the price structure is affected, economic balance is disrupted, and prices eventually decline. If the rate of production is fixed at less than current demand, disruption follows but prices to consumers eventually increase.

This conclusion is so obvious, it seems to me strange that proponents of the bill are not forthright enough to admit it and frankly recognize the economic and social consequences which would inevitably flow therefrom.

Now what is Secretary Ickes' reaction to this aspect? I should like to examine the attitudes and reactions of the Secretary as evidence by his testimony before this committee, in an endeavor to see how his power might be exercised and what philosophical approach he would bring to the administration of the act. Following is a colloquy between Mr. Wolverton and the Secretary:

> Secretary ICKES. We do not propose to limit (production) except in places like Illinois, for instance, where it will appear that they are producing more than they ought to be producing, in comparison with other States which are limiting themselves as between themselves.
>
> Mr. WOLVERTON. Well, of course, it your concern is as to a natural resource which is limited and irreplaceable, I do not see how you are going to put it on a strictly conservation basis, when you only take into consideration supply and demand, or demand as a basis.
>
> Secretary ICKES. Conservation does not mean limitation below the amount we can use or ought to use. I define conservation as a prudent use of our natural resources, by the present generation, with a view to saving all we can for future generations. Now, prudent use does not mean a limited use. It means a wise use without waste.
>
> Mr. WOLVERTON. Are you speaking of physical waste or economic waste?
>
> Secretary ICKES. I am speaking of physical waste.

Gentlemen, the bill does not purport to authorize limitation of production on the basis of demand. Its ostensible purpose is conservation. According to Mr. Hudson, who drafted it, it is proposed to limit production to amounts not greater than those that can be produced without physical waste. Nothing is said about demand. On the other hand, if I interpret the Secretary's words correctly, he proposes that the law, if enacted, shall be so administered as to ignore the conservation factor if and when current demand exceeds the quantity that can be produced under the most efficient operating plan.

If Secretary Ickes proposes to administer this act so as to supply current demand regardless of physical waste, he interprets this legislation as a price-affecting device, and not as a purely conservation measure. And yet, in almost the next breath, he said:

> I do not think there ought to be any powers to fix prices under this bill or do anything that would have that effect.

The Secretary's statements are confusing and contradictory. Is it possible that he fails to understand the economic implications of the proposed legislation?

Again I refer to Secretary Ickes' definition of conservation:

> I define conservation as a prudent use of our natural resources, by the present generation, with a view to saving all we can for future generations. Now, prudent use does not mean a limited use. It means a wise use without waste.

This prompts the inquiries:

What is a prudent use?

What is a wise use?

And in whose opinion?

Today, current demand for crude petroleum is the result of the interplay of an intricate system of checks and balances within the producing industry and between the industry and the consumers of its products.

But if demand is to be determined on the "prudent" use theory, and production limited to the Commissioner's determination of prudent use, all else being wasteful, then under the terms of the bill, we would be placing in the hands of one man, dictatorial, economic powers of tremendous and unprecedented magnitude.

SUMMARY

If you will bear with me a few more minutes, I should like to emphasize the following points by way of summary:

1. Testimony is unanimous that technologic and engineering progress in petroleum production has been phenomenal. The record contains convincing evidence that wasteful methods practiced years ago have been displaced and that the industry is constantly achieving higher degrees of true conservation.
2. The historical review of legislation dealing with conservation, as presented by Secretary Ickes, demonstrates conclusively that the industry, as a whole, and most of the State governments concerned are alive to the need for conservation. It is clear that appropriate legislation keeps with technologic progress. The Secretary speaks of the opposition of some operators to new conceptions and policies. Reluctance of this sort is natural and to be expected on the part of some operators. But these constitute a minority; and the whole record of the evolution of the conservation program is a perfect example of normal progress under a democratic form of government.
3. No evidence was presented at the November hearings showing waste to a serious or substantial extent. The eleventh-hour report of the Department of the Interior containing "specific allegations of physical waste" has just come to hand. I have already commented on that briefly. Time has not yet permitted a study of this report.
4. Testimony suggesting that supplies of oil for the Army and Navy might be inadequate may be dismissed as a purely emotional appeal. Projected to any reasonable period in the future, the facts prove conclusively that there need be no apprehension on this score.
5. This proposed legislation makes it possible for a single Government official arbitrarily to dominate a great basic industry, and would precipitate serious economic repercussions in this and other industries.

CONCLUSION

Gentlemen, the essence of this matter, as I view it, is this: Without claiming perfection by any means, I feel that the petroleum industry has a record of which it can be proud. By all standards it is a new industry, just emerging from its pioneer phase. Starting from scratch only a generation ago, it has developed amazing techniques for finding oil pools at depths below the surface ranging up to 15,000 feet. It has devised ingenious methods and elaborate equipment for extracting this oil from the porous rocks in which it occurs. The steady progressive increase in recoveries of the oil contained in the sands is the best possible evidence of progress in the avoidance of waste. There is no inherent conflict between the legitimate interests of oil producers on the one hand and conservation authorities on the other. Both desire the maximum recovery of oil which is only another word for conservation.

As I have pointed out, proved reserves in the ground today are substantially greater than ever before; but aggressive exploration is imperative to maintain this upward trend in proved reserves. Federal legislation designed to eliminate insignificant waste would undoubtedly stifle the pioneering spirit so essential to the vast exploration program required.

I submit there is no justification for the proposed legislation and that its enactment would be contrary to the public interest.

Mr. COLE. Mr. Lovejoy, you are a member of the board of the American Petroleum Institute, are you not?

Mr. LOVEJOY. Yes, sir.

Mr. COLE. You are associated also with the independent—that is, the National Association of Independents?

Mr. LOVEJOY. Yes, sir.

Mr. COLE. And do they have a separate association in New York?

Mr. LOVEJOY. No, sir.

Mr. COLE. They do not?

Mr. LOVEJOY. No, sir. They have some members, Mr. Chairman, in New York.

Mr. COLE. Thank you very much.

Mr. LOVEJOY. Thank you.

Mr. COLE. We will next hear Mr. Fell. But, before you proceed, does anyone in the room know how Governor Dow is? Is he getting along all right?

Mr. FELL. I have not heard this morning. He was somewhat better yesterday afternoon, Mr. Chairman.

STATEMENT OF H. B. FELL, ARDMORE, OKLA., SIMPSON-FELL OIL CO., EXECUTIVE VICE PRESIDENT, INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA

Mr. COLE. We will hear you, Mr. Fell.

Mr. FELL. My name is H. B. Fell. I am president of the Simpson-Fell Oil Co., Ardmore, Okla. In 1912 I received a degree in civil engineering from Princeton University. Practically my entire business life has been spent as an engineer or executive in connection with the production of two natural resources, namely, anthracite coal and crude petroleum. I have been actively engaged in the management of operations pertaining to the production of crude petroleum for about 20 years. The company with which I am connected is strictly a producing company and does not operate in any of the other branches of the petroleum industry. It is a small, independent company and it is not connected directly nor indirectly with, nor is it obligated to, any major company.

At this hearing I am appearing in the capacity of executive vice president of the Independent Petroleum Association of America with which I have been affiliated since its organization in 1929 and which I have served actively in the position referred to for over 6 years.

I sincerely appreciate the opportunity that you have extended to me to endeavor to present to you one of the most important factors in connection with the conservation of our natural petroleum resources. The sincere and conscientious efforts of the members of your subcommittee in their study of the petroleum industry, beginning with the hearings held in 1934, are fully realized and appreciated. No public officials could have conducted studies pertaining to the conservation of our natural petroleum resources and the proper obligations of the petroleum industry in respect thereto in a more conscientious, unbiased, and thorough manner than has your subcommittee and it is fully recognized that the desire on the part of you gentlemen is to reach sound and proper conclusions. I shall try within my limited capacity to present information to you on the subject assigned to me that may be of some help to you in the conducting of your investigation.

The conservation of our natural petroleum resources involves not only engineering problems but also questions of equity, property rights, and economics. It must be recognized that our nation has been built upon the profit system, the recognition of property rights, and of equal rights to all concerned. The determining of a sound conservation program, therefore, necessarily requires study of the entire petroleum industry. The complexities involved not only in the finding and producing of crude petroleum but also in the transporting, manufacturing, and distributing of the products thereof, requires constant, conscientious, and thorough study to even partially understand this great industry. Personally, I recognize the fact that the factors involved are so complex that it is impossible for any one individual to find a sound and correct solution for each and every problem involved. There are probably more unknowns which must be dealt with in the finding and producing of crude petroleum and natural gas than exist in connection with the finding and producing of any other raw material. With so many unknowns, it is only natural that even fully trained men should differ in their conclusions so how could we hope to find any one man whose findings in every instance would be correct and to the best interest of all concerned?

Insofar as H. R. 7372 is concerned, my analysis of the bill brings me to the conclusion that if enacted into law it would give one man complete power to control the production of crude petroleum throughout the United States since his orders would take precedence over the orders of the regulatory body of any oil-producing State. This would mean absolute control of supply, or monopoly, by one Federal Government official. Those whom I represent strongly oppose the concentrating of such complete power over an industry, or in fact over anything, in the hands of any one man or bureau. Government monopoly is just as unsound and as detrimental as any other form of monopoly. We oppose centralization of power for the control of any industry in any Federal governmental bureau, banking institutions, or industrial corporations. The Federal Government can best serve, we believe, by cooperating in endeavoring to make effective a sound conservation program rather than by endeavoring to control the industry. The Federal Government can also cooperate and be most helpful by assisting in bringing about conditions that will result in fair competition and equality of opportunities so as to protect the small enterprise in this country.

A few of the things that the Federal Government could do that would help to prevent centralization of power within the petroleum industry and thus prevent the development of the power of monopoly are suggested as follows:

1. In order to provide equal opportunity for the domestic producer of crude petroleum to compete with imported crude petroleum and the products thereof, the Federal Government should properly provide a tax on imported crude petroleum and its products equal to the difference in cost of the domestic and the foreign products at the Atlantic seaboard. Instead of this, however, the small excise taxes that were in effect on imported crude oil and fuel oil were reduced 50 percent, on imports up to 5 percent of the amount of oil refined in this country, in the reciprocal trade agreement with Venezuela. The domestic producer must operate within the provisions of the wages and hours law providing minimum wages and maximum hours. He must pay innumerable taxes which during recent years have materially increased. Many other costs have increased as the result of legislation. These increases are beyond the control of the domestic producer. Many result from acts of the Federal Government so it would seem proper to impose such a tax to provide equal opportunity for the domestic producer to compete in the domestic market with imported products produced with cheap labor and at much lower costs.

2. The Congress has enacted and reenacted what is known as the Connally hot-oil law. This is constructive and helpful in that it prevents the violator of State laws from taking advantage of those conforming with State laws.

3. The approval of the interstate oil compact by the Congress is another constructive and helpful legislative enactment for by this means the Federal Government approves of the oil-producing States joining together in developing a program for the conservation of the natural petroleum resources lying within the States concerned.

4. The estimates of demand as published by the Bureau of Mines, made possible by appropriations made by the Congress, is most helpful in assisting the oil-producing States in controlling the rate of production of crude petroleum to the market demand, and thus preventing the waste that would result from production in excess thereof.

We recognize that crude petroleum is a natural resource which should be conserved and that no avoidable waste thereof should be permitted. I sincerely believe that practically everyone engaged in the production of crude petroleum and that most oil-producing States favor the elimination of avoidable waste to the same extent as does the Federal Government. It would seem self-evident that it is to the best interest of those engaged in producing crude petroleum to prevent waste thereof to the greatest extent possible so from the selfish point of view, if for no other reason, the industry would naturally favor the conservation of our natural petroleum resources. As a producer of crude petroleum, I, of course, favor methods of production, and endeavor to operate in such a manner, as will result in my securing the greatest ultimate economic yield from each property in which we are interested.

In the early days of the petroleum industry engineering did not enter into the production of crude petroleum to any material extent and little or nothing was known about reservoir conditions. In fact it was the generally accepted theory that it was detrimental to shut a well in or even restrict the flow of oil therefrom.

On account of the theory that the oil belonged to the person producing and reducing it to possession, each operator in a pool on account of the migratory nature of petroleum in order to endeavor to get as large a share as possible of the oil produced from the pool drilled up his properties as rapidly as possible and produced his wells to full capacity. This naturally resulted quite frequently in the production of more oil than there was a market demand for or transportation facilities to handle. In many instances the companies having pipe lines into the field would take the full production from the properties which they owned and then production from properties of operators with whom they might be friendly leaving other operators without an outlet. The operators without an outlet, in order to prevent their oil from being drained from under their properties, were forced to continue to produce their wells and store the oil produced in such manner as possible. This often necessitated the building of earthen storage or dams in dry creek bottoms to be used as containers for this oil. Heavy rains would come along and wash out these dikes thus resulting in actual physical loss of the oil. Not only would physical waste result but a most inequitable condition. The small operator not having transportation facilities was at the complete mercy of the larger company having such facilities and could be forced to dispose of his properties at a great sacrifice.

The situation finally was so bad in the Healdton and Cushing fields of Oklahoma that the independent producers in order to protect themselves took steps to bring about the enactment of the first real conservation law. This law was enacted by the Oklahoma legislature in 1915. It was only after the operators, having passed through most serious conditions, had determined by experience and had ascertained by the trial and error method what seemed to them to be a good way to eliminate a bad situation. Production in excess of market demand was, therefore, the basic reason for the enactment of the first real conservation law. Under this law waste was defined as including—

> economic waste, underground waste, surface waste, and waste incident to the production of crude oil in excess of transportation or marketing facilities or reasonable market demands.

The law also provided that when the full production of a field could only be had under a condition constituting waste that the production should be limited to the amount that could be produced therefrom without waste. It was also provided that each well within a pool should be permitted to produce its pro rata part of the production allowed from that pool and in addition provisions was made that in making allocations to the pools that these allocations should be made without undue discrimination between pools.

It will be noted that in the definition of waste as contained in the Oklahoma statute of 1915 that underground waste was included which would indicate that probably, by that time, some in the industry were beginning to realize that too rapid a rate of production did result in underground waste. However, the necessity for the enactment of the Texas and Kansas conservation laws, as well as others, originally developed as a result of production in excess of market demand. It was really late in 1926 or in 1927 before the conservation program, as we now know it, came into effect through proration to restrict production. The fields in which production has been restricted have been the laboratories that have been used by the engineers in learning about reservoir conditions, including all forms of reservoir energy, and the most effective manner in which they can be used. In the years that have intervened great technical progress has been made in learning how to best conserve our natural petroleum resources through effective conservation of the reservoir energy. The major portion of the improvement in conservation methods developed from within the industry and the industry with the help, in more recent years, of the regulatory bodies of the oil-producing States has made wonderful progress in this direction.

Market demand is accepted now to mean current consumptive demand. The limitation of production of crude petroleum to the market demand by the conservation agencies of the States has been the cause of some adverse criticism. Many people have been of the opinion that this procedure was one of price fixing only and that it was not truly a conservation measure. In view of the widespread nature of this misunderstanding and in view of the fact that the conservation laws of the principal oil-producing States provide for limiting production to market demand and the fact that the conservation agencies of the several States are actually following this practice, a careful analysis seems fully justified. It is believed that this analysis will fully demonstrate that actual physical waste will result unless the production of oil is limited to market demand. This may best be demonstrated by examining the relations between the producers in a single pool in times of oversupply.

Production of oil from any oil pool in excess of current consumptive demand for oil therefrom and the reasonable requirements for storage reserves necessarily and inevitably results in actual physical waste of oil and gas. It usually results also, in economic waste, which in turn aggravates and increases the physical waste originally incident to such overproduction.

An elementary consideration of the fundamental facts in connection with the physical conditions under which oil and gas exists in the pool underground and are produced and marketed therefrom will demonstrate fully the truth of the above statement and should clear up the confusion existing in the minds of many people in the point. Many statements have been prepared in connection with this subject by men well qualified in connection therewith but most of these statements have been based on the assumption that those to whom the statement was presented were thoroughly familiar with all factors pertaining to the conditions existing in a reservoir or pool containing oil and gas. I feel that in order that this subject may be clearly understood that it is essential that it be presented in as elementary a manner as I can.

In order to understand the definite relation between physical waste and market demand, it is necessary to have a clear picture of the peculiar circumstances under which oil and gas exist underground and the peculiar characteristics they possess not shared by other species of property. It is also necessary to understand the characteristics of a typical oil pool. These circumstances and characteristics are generally understood and accepted by informed members of the industry, as follows:

(1) Oil and gas exist in the ground in porous rocks, including sandstones, limestones, and other formations, and are usually held in place or confined beneath an impervious shale or clay above water. The enclosure or trap is referred to as a reservoir or pool.

(2) They exist in their undisturbed state under pressure, often very high, and are so entrapped as not to escape unless the impervious formation above the oil be in some way fractured or broken or pierced by a hole.

(3) In such pools both oil and gas are encountered as occupants of the same reservoir.

(4) There often is found a quantity of free gas occupying the higher portions of the reservoir, such gas lying above and in a plane contact with the oil contained in the reservoir, and, due to its expansibility in all directions, exerting a pressure throughout the whole reservoir.

(5) In addition to such free gas, large quantities of gas are usually found in the reservoir dissolved in the oil contained therein, which association between the oil and gas reduces the viscosity of the oil and otherwise tends to increase its mobility, so that when the reservoir is penetrated by a well the propensity of the oil to migrate to the opening thus created and to be lifted to the surface is augmented and its freedom of movement toward areas of lowered pressure increased.

(6) The expansibility of the free gas contained within the upper portion of the reservoir and of the gas dissolved in the oil therein constitutes what is known in the oil industry as the gas energy of the particular pool, and, when the reservoir is penetrated by a well, the expansibility of the gas propels the oil into the well and lifts it to the surface for recovery for commercial purposes.

(7) Until such time as the gas pressure in the reservoir is dissipated through wells drilled into the reservoir, the oil and gas continue to flow through the wells when open.

(8) There usually are found in the reservoir beneath the gas and oil, large quantities of water, existing under pressure and exerting a force laterally and vertically against the oil and gas; and, as oil and gas are removed through wells penetrating the reservoir, the water forces them forward and moves in to take the place of the oil and gas removed, exerting a pressure thereon and aiding the gas energy in moving the oil into the wells and in forcing the oil to the surface.

(9) As the pressure in the reservoir is lowered by the removal of oil and gas from the reservoir, the viscosity of the oil is increased as the gas dissolved in the oil comes out of solution and the oil becomes more difficult to move through the pores of the reservoir rock to the well, to that as the process of removing the oil continues the reservoir energy is lowered and the amount of energy required to move the oil is increased.

(10) Both gas and water tend to move toward any area of lowered pressure at a more rapid rate than oil, particularly oil of high viscosity, and if the pressure is unduly reduced through the rapid withdrawal of oil or gas, the tendency is for the water to bypass the oil, particularly that oil in the less permeable parts of the reservoir, channeling through the oil-saturated sections of the reservoir, coming up into the oil-saturated section, and thus trapping off the oil, preventing its recovery by the best devised production methods now in vogue, this condition being aggravated both by rapid withdrawals of oil and gas from the field as a whole and by unequal withdrawals from localized areas as against equalized withdrawals over the field under relatively uniform pressure; the maximum recovery is secured by the maintenance as long as possible of the gas supply in the pool and of relatively high and relatively uniform pressures throughout the reservoir, preventing the rapid

encroachment and channeling of the water existing beneath the oil and exerting a pressure against same.

(11) The force of the water and gas in a reservoir is exerted throughout it, and the gas and water energy are the common agencies by which all operators in the pool are permitted to recover their oil, and the undue lowering of the pressure affects recovery throughout the field, and the dissipation and waste of gas in any area adversely affects the recovery throughout the pool; the movement of gas, oil, and water toward an area of lowered pressure created by the penetration of the reservoir by a well is not affected by property lines at the surface, and the oil coming to the surface through a well located on one tract of land may be drained from underneath adjoining tracts, and the water drawn into the oil and gas-saturated section of the reservoir may entrap and cause waste of oil under the tract of land which the well is located and also on adjoining tracts.

(12) When the gas energy and the water energy or drive operating, as above described, are so far dissipated as to be insufficient to lift the remaining recoverable oil to the surface, it can be produced, if at all, only by pumping or other artificial means.

It will be seen from the above that it is absolutely essential to the prevention of actual physical waste that the withdrawals of oil from the pool as a whole should not be too rapid and that they be ratable over the pool as a whole and not excessively high from some properties or wells as against other properties or wells.

In the absence of police regulation and of actual physical injury to the properties of an adjoining landowner or operator, it is the rule of property in Texas, as announced in the case of *Prairie Oil & Gas Company* v. *State* (231 S. W. 1088) and is likewise the rule of property in other States, that the surface owner who brings oil to the surface through wells on his land is the owner of the oil so produced by him. Because of the peculiar characteristics of oil and gas and the conditions under which they exist in reservoirs and are brought to the surface, as outlined above, and because of this rule of property, and in the absence of measures of control, each owner of land under normal competitive conditions will seek to recover the largest quantity of oil in the shortest time so as to prevent the recovery of his oil by the owner of neighboring land. If he does not drill for and produce oil on his land, it will be drained from underneath his land and be captured by the owners of other land in which the pool is located by wells drilled thereon. Where no restraint is exercised the tendency, therefore, is for each owner in the pool to seek to produce maximum quantities of oil.

In general, there will usually be found in the various oil pools three classes of operators: First, the small operator who is in the producing business only and who has no pipe lines, refineries, or distribution system for the sale of products; second, the larger producer who in addition to producing oil may have a pipe line with which to transport the oil to market or a refinery or is engaged in the marketing of refined products but who is not engaged in all of these branches of the business; and, third, the larger operator who in addition to producing oil has pipe lines for the transportation of same, refineries, and a marketing organization for the sale of products. The first class of producers mentioned, generally referred to as independent producers, must sell all of the oil which they produce; the second class may be required to sell all or a part of their oil or they may in some instances purchase oil in addition to that which they produce; the same is true of the third class. When a condition of overproduction exists in a pool in the sense that oil is produced in excess of the market demand therefor, unless the second and third classes of producer or other purchasers will purchase the oil produced by the first class of producers, the latter will be compelled either to refrain from producing oil entirely and thus permit the owners of surrounding leases to drain their oil from beneath their land and thus lose it, or to produce the oil and store it. If the overproduction is serious, the producers in the second and third classes will be required to store, also. Where such overproduction exists, therefore, the storage of oil is inevitable. Storage of oil in large quantities under such conditions inevitably results in the evaporation of the more volatile portions of the oil and the deterioration of that remaining, which constitutes waste in the ordinary sense of the word, and also results in unnecessary fire hazards. Testimony presented before the Railroad Commission of Texas and in numerous lawsuits and the reports of the Bureau of Mines indicate that during the first year of storage this evaporation ranges from one-half to 5 percent, or as high as one-twentieth of the total quantity of oil stored. It can readily be seen that where large quantities of oil are stored the waste may be tremendous.

The cost of storing oil is very great, and the experience of the oil industry has convinced its members that storage of oil, in excess of necessary working stocks, is wasteful and uneconomic. Many producers now refuse to produce and store oil in excess of necessary working stocks, and many others are unable financially to provide storage. If a fortunate producer in the field, whether of the second or third class outlined above or of the first class who has succeeded in making a contract for the sale of his oil, is in position to produce his wells to capacity or at any rate of flow and market his oil, and his neighbor is not so fortunate as to have a market for his oil in the same amount and is unable or unwilling to store and is, therefore, unable to produce his wells to the same capacity or is required to close them in to wait for a market, there arise unequal withdrawals from the pool. In other words, the man having a market will produce large quantities of oil over against his unfortunate neighbor without a market. If the rate of withdrawal from the leases of the man having a market is rapid, there results a dissipation of the gas energy of the pool, and irregular water encroachment in the oil-saturated section of the reservoir results from the operation of the physical conditions above explained; the water channels toward the area where the production is high, thus trapping off oil and drowning the oil-saturated section of the reservoir, with the result that large quantities of oil are so trapped off that they cannot be profitably recovered even by the best devised methods of production now known. Such trapping of oil may take place under the lands of various owners besides the producer securing the disproportionate recovery.

The relation between production in excess of market demand and physical waste above set forth is not theoretical: it is actual. Let us examine a few actual occurrences to show how and why it takes place. Since the practice of limiting production to reasonable market demand has been followed for several years with a fair degree of consistency, we have a limited number of outstanding illustrations occurring in recent years. At least two of these will be cited later. We will first look at outstanding cases occurring before the practice in question was fully and generally established and accepted.

Under the order of the Railroad Commission of Texas originally entered for the Panhandle field, production for the area was fixed at 80,000 barrels per day; and the proof showed that if this quantity of oil were produced ratably over the field so that uniform back pressures could be maintained, no physical waste would result. In other words, the field could produce this quantity of oil by ratable withdrawals without dissipating the gas energy or causing too rapid encroachment of the water as a whole or in localized areas. After the order was put into effect, and most of the properties were connected up with pipe lines and the purchasers were securing their demands, the Prairie Oil & Gas Co., which had been buying substantial quantities of oil from the area, announced that it would withdraw from the Panhandle as a purchaser. The market demand for Panhandle oil, therefore, dropped by the amount of the Prairie's purchases. This resulted, according to the proof in the *Danciger case*, in leaving some 500 wells unconnected. These wells had no outlet to market and were, therefore, closed down, except that perhaps a few of the operators continued to produce the allowable production and stored it. Later the Phillips Petroleum Co. withdrew as a purchaser.

The market demand for oil from the Panhandle was decreased by the quantity of oil that Phillips had been buying. The wells and properties from which Phillips had been buying oil were disconnected and, except for such of the producers as stored, these wells were closed down in the same way that the wells with which the Prairie was connected were closed. The withdrawal of these two purchasers resulted in several hundred wells being without pipe-line connections solely because there was no longer a market demand for the oil theretofore produced from such wells. The properties and wells affected were scattered throughout the Panhandle area. The result was that throughout the area would be found leases closed down offset by leases producing the allowable production fixed by the railroad commission's orders and, also, against leases producing to capacity in violation of the railroad commission's order. Later on some of the principal purchasing companies connected with a portion of the properties formerly connected to the Prairie and the Phillips; but in doing this, since they were buying only a limited quantity of oil from the Panhandle they were compelled to cut down their takings from all of the properties with which they had formerly been connected so as to take a like quantity from the new connections. All of this resulted in unequal takings throughout the Panhandle area. Some properties were entirely closed down. Some were producing at a very low rate, considerably below the allowable fixed by the order of the railroad commission. Some were producing at the allowable fixed by the order; and numerous operators were producing either to capacity or in quantities well above the allowable fixed by the order. This unequal withdrawal and disproportionate taking led inevitably to the dissipation of gas energy of the pool and to the irregular encroachment of water in those areas where the withdrawal was more rapid as against the areas where there was no withdrawal or the withdrawal was very slow. In addition to the actual conditions of physical waste that resulted, there were gross inequities as between operators and land owners, and in effect an actual taking of one man's oil by another.

There was simply no way by which this storage of oil and these unequal withdrawals of oil could be prevented in the Panhandle except by reducing the allowable production for the field to the new market demand resulting after the withdrawal of the Prairie and the Phillips companies. The waste incident to the unequal withdrawals was brought about solely by the decrease in market demand. It was not due to any other cause; and in order to prevent this waste the railroad commission decreased the allowable production from 80,000 barrels finally to 40,000 barrels as purchasers continued to withdraw from the area or decrease the amount of their purchases. When the allowable production was reduced to 40,000 barrels, the purchasers, in order to get the quantity of oil they needed, extended their connections to the unconnected wells; and practically all of the properties in the Panhandle district then became connected and thereafter, except for those who produced in open violation of the commission's order, there resulted a ratable restriction over the field and a ratable participation by all producers in the market; and, with the exception stated, the unequal takings were removed and the waste incident to the necessary storage of oil and to these unequal withdrawals was stopped.

The reduction of production to market demand in the Panhandle, therefore, was not made to prevent economic waste. It was not made as a price-fixing measure. It was made in order to bring about the ratable taking of oil and to insure orderly and uniform production in the field in order to prevent the irregular encroachment of water, the dissipation of the gas energy of the pool with resulting loss underground of oil, and gross inequities as between producers. In other words, it was a conservation measure pure and simple, designed to effect and actually effecting the prevention of underground actual physical waste and loss of oil. Incidental to the prevention of waste, it became equally important to provide equitable participation in production and markets by all producers.

The condition outlined in the Panhandle was even more acute through west central Texas where literally thousands of wells were left without connections due to the withdrawal from the area of purchasers like the Prairie and the reduction in the quantity purchased by the principal purchasing companies like the Texas, the Humble, the Magnolia, and others. When the allowable production for the area was fixed at the amount the purchasers actually desired to buy, these wells then became connected and ratable takings resulted. Before the reduction of production to market demand, wells were producing at different rates, and literally thousands of wells scattered throughout the area were closed down. Unequal takings were the rule, with the waste incident thereto and the loss of oil by drainage. The only way the railroad commission could stop these unequal takings was to limit the production to what the market would absorb, whereupon the buyers reached out and made connections with unconnected wells in order to get the quantity of oil needed for their markets.

It was well known by all producers in the north Texas area and is shown by the proof before the railroad commission in its hearings that the production of oil in north Texas during all the latter part of 1930 was well in excess of the market demand for the oil from this area; that large quantities of this oil were, therefore, going to storage in accordance with the elemental principles set out above; and that hundreds of wells were unconnected and without a market outlet and unequal withdrawals were the rule throughout the area; and that physical waste was resulting from these unequal withdrawals. The fortunate man who had a market was producing to capacity; the less fortunate man who had some market was producing considerably below capacity; and the unfortunate producers without a market were either shut down or were producing and running to storage. Serious conditions of actual physical waste, according to the proof, existed as a result of storage and these unequal takings. The first order of the commission fixed the allowable production for the area some 12,000 barrels above the market demand for oil from the area. The result was that unequal takings and storage continued and waste continued. Later on the commission reduced the allowable production to the amount which the market would absorb. All of the properties, or practically all of the properties, in this district were then connected to a pipe line and thence to market and the conditions of unequal withdrawals and of storage ceased. The proof showed that if the oil had been ratably taken over the area in the various fields there would have been no waste by the production of the amount originally fixed by the order of the commission, but the market would not take this amount and waste necessarily resulted, as pointed out, from the production in excess of this market demand. When the production was limited to market demand, the cause of waste was removed. In no other way could the cause be removed.

It is a well-known fact that a condition in east Texas obtained in its early history under which some properties were produced to capacity, some were operated at the allowable production, some operate below the allowable production, and very many properties were entirely closed in. Those operating below the allowable production and those closed in operated under these conditions because there was no market for the allowable oil from these properties. Those fortunate enough to do so had absorbed the market. This resulted in unequal takings all over the field. The unfortunate man without a market in some cases was offset by one producing the allowable production on one side and by a violator on the other side who was producing largely in excess of the allowable production. Serious conditions of waste and gross unfairness resulted. If the production has been limited to the amount which the market would absorb and if it had been uniformly distributed over the field as a whole, the result would have been that all properties in the field would be connected and the allowable production from each would have moved to market and physical waste due to the trapping off of oil by the encroaching waters due to the unequal takings and to inordinate takings in localized areas would have been stopped.

Since the general adoption of the practice of limiting production to reasonable market demand, there have been few glaring illustrations of production in excess of market demand illustrating pointedly the effect of such in relation to waste. However, there were two rather forceful illustrations occurring in the last half of 1938. One was the K. M. A. field in north Texas, and the other was the situation arising in several southern Oklahoma fields as a result of the rapid increase of production in Illinois.

As early as May 1938, the principal purchasers of crude oil in the K. M. A. field began refusing to make connections to new leases but continued to run oil from new wells on leases to which they were already connected. The allowable production was approximately 21,500 barrels and the oil actually being moved by the purchasing companies was approximately 3,000 barrels less than this amount. As a result, with a drilling program in operation, the number of unconnected wells increased and by August the Texas Co., Magnolia, and Sinclair-Prairie prorated their purchases and took substantially less than the allowable from the wells to which they were connected including their own. By October, in addition to unratable production incident to a large number of unconnected wells in the field, the following program of purchasing was in effect as applied to connected wells: Gulf taking 100 percent of allowable; Sinclair-Prairie taking 65 percent of allowable; the Texas Co., taking 80 percent of allowable; Continental taking 75 percent of allowable; and Magnolia taking 80 percent of allowable. This situation resulted in a confused state of unratable production and inequitable participation by producers in the markets. Some of the producers stored oil that the purchasers would not buy, and others sold certain quantities at very low prices. The whole situation resulted in waste, both above ground and underground.

The situation in southern Oklahoma in the latter part of 1938 is the second case in point. The principal purchasers in southern Oklahoma were Magonlia, Carter, Shell, Pure, Bell Oil & Gas Co. and the Rock Island. Due to the effect of the increased Illinois production on the demand for Mid-Continent oil, and particularly due to the loss of markets by Carter for Oklahoma oil moving through the Ajax line to the east the Carter lost its market for substantial quantities of oil produced in those fields. The Pure Oil Co. got their requirements in Illinois and their demand was eliminated. As a result of the decrease in the market demand for Oklahoma oil and the failure to lower the allowable production of the State promptly to the level of this reduced demand, there were numbers of unconnected wells and differing rates of pipe-line proration by the remaining purchasers. In the same pool, at times, there were as many as four different rates of purchases from connected wells, and other wells were not connected to any purchaser. This led to unratable production and inequity between wells and properties, and also to the accumulation of storage oil. It was only when the allowable was made to conform to the demand for oil that all wells were connected and ratable production restored.

Mr. WOLVERTON. Was the illustration you were just giving of the Panhandle district, an evidence of the desire to provide conservation at that time?

Mr. FELL. Well, that was several years back, Mr. Wolverton.

Mr. WOLVERTON. That had nothing to do with the shutting down of the wells in August last?

Mr. FELL. No, sir.

Mr. WOLVERTON. Are you going to discuss that?

Mr. FELL. I will be glad to answer any questions you care to ask me with reference to it, Mr. Wolverton.

Mr. WOLVERTON. I just wanted to know whether you intended in your paper to use that situation as an illustration of conservation.

Mr. Fell. No; I have not used that in this paper at all.

Mr. Wolverton. You do not intend to make any reference to that?

Mr. Fell. As I said, I will be glad, sir, to answer any questions that you may ask me with reference to it.

Mr. Wolverton. I take it from the illustration that you have already given, that the steps that were taken in connection with that shutting down were in the interest of conservation.

Mr. Fell. Yes, sir; this case in the Panhandle that I have referred to. In all these other cases that I have referred to I say, if production allowables had not been reduced and this production in excess of market demand had been permitted to continue, that you would have had lack of ratable taking in these fields; some producers producing excess amounts in one part of the field and other producers not being able to produce at all.

Mr. Wolverton. You have gone to some length to indicate what is waste and what has been done in the interest of conservation.

Mr. Fell. Yes, sir.

Mr. Wolverton. But was not done in any sense as a price stabilization effort?

Mr. Fell. Yes, sir; in those particular cases, I am talking about now, where producers are allowed to produce in certain oil fields more oil than there is a market demand for, that will result in lack of ratable taking in that area because some producers will have no outlet, while others will have an outlet for maybe 5 percent, and others of different percentages, and that will result in underground waste.

Mr. Wolverton. Now, as to the action taken last August by the several States in acting together whereby they shut down all wells for a limited time, was that shut down in the production of oil in the interest of conservation or to stabilize prices?

Mr. Fell. What their reasons were, Mr. Wolverton, of course, I could not tell. I did not consult any of them; but I could give you a picture, I think, of the conditions that existed during the period prior to that shut-down that might have caused them to reach whatever conclusions they did.

Mr. Wolverton. I hope that somebody who can speak authoritatively will give us some information on that subject.

Mr. Fell. Of course, I was not a member of any regulatory body and did not discuss it with any regulatory body, so what reasons they had I could not say; but I could give you any statistical information on things that existed, conditions that existed prior to that time, that might possibly have caused the members of the State commission to feel——

Mr. Wolverton. Your paper indicates that you have given considerable study to the subject, and I was hoping that your studies had carried you far enough to have made some explanation of that shutdown of the wells and the fields in August, last.

Mr. Fell. All I could give you on that would be my opinion, Mr. Wolverton. I could tell you what the conditions were and why some might have thought that was the best way that it could have been accomplished.

Some of these conditions to which I refer did exist, too, at that time. In southern Oklahoma, for example, these conditions existed at that time; some of these conditions existed in eastern Kansas, and it may be that on account of the excess storage of gasoline that had been accumulating; the fact that Illinois had been producing—I think it had produced 12½ million barrels in the first 7 months, over the Bureau of Mines estimates—the fact that these States were competing for markets had brought about these maladjustments, and it might have been that some of these States felt that in order to cure those maladjustments that this was the proper way to do it.

Mr. WOLVERTON. My interest in the subject was first aroused because of newspapers articles that were carried at the time. They indicated that the reason that it was necessary to shut down the wells was because one major company had reduced its purchase price of oil.

Now, if that was the consideration that led to the action that was taken then it is certainly foreign to the basis on which you are now presenting this paper.

Mr. FELL. Yes, sir. I will say this, further on, Mr. Wolverton, I am going to be perfectly frank and point out that I do not think that you can have any limitation of production—I do not care for what purpose or by whom—that is not going incidentally to affect the price. I do not think it could be done.

Mr. WOLVERTON. We may as well proceed, as evidently I have the same opinion as yourself with respect to that.

Mr. FELL. Yes, sir; I think so. I do not see how anybody could honestly say that control of supply of any product, irrespective of what the purpose is, is not going to have an effect on price.

Mr. WOLVERTON. Very well, go ahead. I am in accord with that, and we will not argue about it.

Mr. FELL. It is true that economic waste takes place under the conditions set forth in the several fields above when production is in excess of market demand because the unfortunate man who has no market under the circumstances stated will sell his oil at any price he can obtain rather than try to store it or permit his neighbor to drain it from beneath his land. This results in the price finally going down to the point where the oil cannot be profitably produced; and the constant bidding by the producer for the sale of his oil tends to aggravate the condition of unequal withdrawals and thereby tends to aggravate the condition of physical waste which results from such. The fact that there is economic waste incident to the production of oil in excess of market demand in no sense lessens or negatives the existence of physical waste necessarily and inevitably incident thereto and occurring in the manner pointed out above. If the State intends to prevent the actual physical waste of oil and gas, it cannot accomplish this purpose unless it empowers some agency to bring about ratable takings. No agency can bring about ratable takings by the exercise of the police power unless it has the authority to limit the production in a pool to the market demand for the oil therefrom. If it cannot bring about ratable takings, it cannot prevent physical waste. Because of the peculiar characteristics of oil and gas and the conditions under which they exist underground and are produced, waste necessarily follows from the failure ratably to produce over the field as a whole.

Market demand for oil is not an abstraction, as some people seem to have in mind. It is very concrete when considered in connection with the actual operation of an oil field. Market demand for oil from the field is nothing more nor less than the requirements of those who buy oil in the field. When a purchaser withdraws or decides to buy less oil, the market demand is decreased by the amount of the reduction of his purchases. Where conditions are stabilized, it is usually not difficult to determine the market demand for oil from a field. This is true because the oil from the field is transported by pipe line either direct to refineries or to railroads and from these to refineries, and the amount transported by these pipe lines and the demands of the refineries involved are, after all, not difficult to obtain where production is on an orderly basis.

When I say "stabilized," I want it thoroughly understood that I mean after a field settles down, and development has been completed. I am not talking about stabilization of price, but stabilization of outlet there.

Today the conservation agencies have the Bureau of Mines estimates of demand by States, dependable figures as to drafts upon and accumulation of stocks of several grades of crude and products, the nominations of various purchasers, pipe-line capacities, refinery supplies, and other data and information from which the market demand for oil in the States and then for the several fields may be determined.

Practically all of the oil and gas conservation laws of the various States provide that the total allowable production of the State should be allocated among the various prorated pools of the State without unreasonable discrimination between pools. In order to effectuate conservation, it does become essential to restrict production from flush pools and in many instances to restrict production to an amount even less than the so-called optimum rate of flow in view of a lack of market demand. Since oil producers have their business regulated in most of the oil-producing States to the extent of having the rate of production from their properties controlled by State regulation, it is essential as a matter of equity that some statutory provision be in effect that would prevent and prohibit the regulatory body unduly discriminating for any reason against the producers in one pool in favor of the producers in another pool. In any conservation program this provision, accordingly, becomes essential.

Mr. Wolverton. In your opinion, should there be any Federal legislation to effect that purpose?

Mr. Fell. No, sir; I do not think that is necessary.

Mr. Wolverton. Do you favor Federal regulation of any kind?

Mr. Fell. I think that sufficient progress has been made, Mr. Wolverton, since your committee started work in 1934, to justify thoroughly trying out the present system. Development growing out of studies by your committee and recommendations that your committee made and the action taken by various oil-producing States has brought about a change in conditions resulting in improvement during the intervening years. There has been improvement in the conservation laws of States that had them at that time; the enactment of conservation laws in many States that had no conservation laws at that time; a long series of court decisions upholding those laws; the interstate compact; the Connally Hot Oil Act; and the conditions now are such that we could very well continue as we are for the present.

Mr. Wolverton. I am interested in your present viewpoint, because of the fact that you appeared before our committee——

Mr. Fell. I did.

Mr. Wolverton (continuing). In 1934 when we were holding hearings on the Thomas-Disney bill and in answer to Mr. Mapes, questions, you indicated that you were favorable to the principles of that bill. I quote:

> Mr. MAPES. Would you favor some such provision as was contained in the Thomas-Disney bill that would allow the Federal Government to go in and regulate production in case the States went over the allotment?
>
> Mr. FELL. Yes, sir; in periods of overproduction.
>
> Mr. MAPES. In other words, you practically endorse the Thomas-Disney bill?
>
> Mr. FELL. The basic principles of it; yes.
>
> Mr. MAPES. Do you distinguish very thoroughly between the principles of it and the concrete provisions of it?
>
> Mr. FELL. No, sir. Any way it can be made effective is what I meant when I said any way the principles contained in there can be made effective.
>
> Mr. MAPES. The provisions of the Thomas-Disney bill seem to me to be quite in accord with your recommendations.
>
> Mr. FELL. Yes, sir.

Mr. FELL. Yes, sir; I gave that testimony then.

Mr. WOLVERTON. Are you of the same opinion now?

Mr. FELL. No, sir; I am not, for the reason——

Mr. WOLVERTON. So, views have changed, as the result of your experience in the intervening years, from the time you gave the testimony that I have just read?

Mr. FELL. And also, Mr. Wolverton, on account of improvements in conservation laws and the enactment of conservation laws in many States that did not have any at that time; and on account of the fact that at that time many of the States having conservation laws were having their efforts to enforce conservation defeated in the courts by having orders declared illegal they were unable to enforce them.

There was a complete—well, entirely different situation from what we have today.

Mr. WOLVERTON. At the time you gave that testimony you were a representative of the National Stripper Well Association?

Mr. FELL. Yes, sir.

Mr. WOLVERTON. In fact you were its executive vice president?

Mr. FELL. Yes, sir.

Mr. WOLVERTON. Do you hold that position now?

Mr. FELL. Yes, sir.

Mr. WOLVERTON. At that time you expressed the opinion in the hearings as follows:

> The National Stripper Well Association desires to go on record before your committee, as the act of their executive committee, that they recommend for the consideration of your committee that such Federal legislation be enacted as is necessary to balance supply with consumptive demand, including control of production, restriction of imports, restriction of withdrawals from storage, leaving, however, to the States the allocation within the State of the total Federal allocation to that State so long as the State keeps its production down to the Federal allocation.
>
> We also urge a tariff on crude petroleum and its products, and a continuation, until a tariff is imposed, of the present excise tax on imported crude petroleum and its products with an increase of the excise tax on crude and fuel gas oil from a half a cent per gallon to 1 cent per gallon, and we take the position that imports for supplies for vessels at American ports are actually imports for domestic consumption, and should be subject to all restrictions on imports and to all excise taxes or import duties.

Now, that was quite a program which you suggested to this committee at that time.

Mr. FELL. Yes, sir, so far as those things are concerned.

Mr. WOLVERTON. Are you advocating that program now?

Mr. FELL. Some of the items in the program, yes, sir; some of those things I do not think anyone has the power to do except the Federal Government.

Mr. WOLVERTON. Well, how about that recommendation that you made to us that such Federal legislation be enacted as is necessary to balance supply with consumptive demand, including control of production, restriction of imports, restriction of withdrawals of storage?

Mr. FELL. I do not advocate that broad a program at this time.

Mr. WOLVERTON. Do you will favor that?

Mr. FELL. No, sir; I do not think, with the changed conditions that all that would be necessary.

Now, under the conditions that existed at that time, I think as you will remember, Mr. Wolverton, we had an entirely different situation. At this time some of these things can be accomplished by the various States.

Mr. WOLVERTON. How can the States, as between themselves, enforce the Federal allocation?

Mr. FELL. Oh, they cannot enforce the Federal allocation.

Mr. WOLVERTON. Then, do you not think that there is need for the Federal allocation at the present time?

Mr. FELL. I think that the Bureau of Mines should continue to furnish their estimates of demands; yes, sir.

Mr. WOLVERTON. But that is not what you advocated to this committee when we held our previous hearings about 5 years ago.

Mr. FELL. No, sir.

Mr. WOLVERTON. You advocated that there should be such Federal legislation enacted as is necessary to balance supply with consumptive demand, including control of production.

Now, it seems you do not believe in that?

Mr. FELL. I do not think that is now necessary; no, sir.

Mr. WOLVERTON. Was it your purpose to come before the committee at this time to inform us of the change in your views or——

Mr. FELL (interposing). No, sir; but the fact that I have changed my views and different conditions have arisen, was no reason I did not feel that I should not come before the committee and, where I have any change of opinions to state them honestly.

Mr. WOLVERTON. I cannot conceive of any stronger recommendation that could be made by anyone than you made to the committee 5 years ago and now you are just as positive that you were wrong at that time.

Mr. FELL. I am saying this, Mr. Wolverton; I am saying that since that time and since this committee made its investigation in 1934, that there have been new laws enacted in many of the oil-producing States that they had no conservation laws; that many of the laws that existed at that time have been improved, and the States are now able to do what they were not able to do at that time.

Mr. WOLVERTON. But your recommendations went further than what you are now saying as an explanation, because you stated that legislation should be enacted that would leave to the States the allocations within the States of the total Federal allocations to that State. You used these words:

> So long as the State keeps its production down to Federal allocation.

Mr. FELL. Yes, sir; I did.

Mr. WOLVERTON. Then you do not think there is any necessity now for Federal legislation to keep the States down to their allocation?

Mr. FELL. I do not believe so right now, based on the figures shown, as to the relationship between supply and demand.

Mr. WOLVERTON. If the States do not, as between themselves, have respect for the allocations of the Bureau of Mines and are not satisfied to keep production within the allocation that is tentatively fixed by the Bureau of Mines, then, do you think there should be Federal legislation to make any such State come into line?

Mr. FELL. I do not think that with the interstate compact, Mr. Wolverton, and with the information that the States have now that they are going to get very far out of line. They may temporarily get to a point where they will produce in excess of demand, and then they are going to have to adjust.

Mr. WOLVERTON. It might be that they would consider it to their best interest to go along in a way that you have indicated they are now going along and, to you, that seems satisfactory; but suppose they did get out of line?

Mr. FELL. You mean suppose they produced away in excess of the demand?

Mr. WOLVERTON. Yes.

Mr. FELL. Or away short of the demand, either one of them?

Mr. WOLVERTON. Yes. Then, would you come back to your original opinion that there should be Federal regulation?

Mr. FELL. No; I am a little worried about this in connection with it, Mr. Wolverton. You take under H. R. 7372, even though there is no provision in there for a balance of supply with demand, of course, under the waste provision features of that bill, one man would really have the power to determine whether production was going to be equal to demand or less than demand or over demand. That would leave it there to one man.

Mr. WOLVERTON. Well, that would have applied to the time you were making this recommendation to us?

Mr. FELL. Not necessarily. You might have had a board set up at that time to have handled it.

Mr. WOLVERTON. Then, would you favor a Federal board?

Mr. FELL. No, sir; I do not think that is necessary now.

Mr. WOLVERTON. Then, you are opposed to it whether it is an individual or whether it is a board?

Mr. FELL. Yes, sir; at the present time. I do not see, in view of the changed conditions, the changed legislation, and the improvement that has taken place since 1934, that this need now exists, as I repeat in your committee's report, you recommended against that type of legislation and that we try the Interstate Oil Compact as a means of accomplishing the necessary things that were thought to be desired at that time.

Now, we have tried that and as it has been pointed out——

Mr. WOLVERTON (interposing). In other words, the committee had better judgment than you?

Mr. FELL. I believe you did; yes, sir. I believe you did, although I stated in my 1934 testimony that the results might be accomplished through an interstate oil compact.

Mr. WOLVERTON. Very well; I will stop there. [Laughter.]

Mr. **Fell**. The conservation laws of the various oil-producing States also provide in most instances that the regulatory body shall not restrict the production of wells below a fixed amount per day. These amounts are termed, within the industry, marginal allowables. There are two purposes in this provision. One purpose is to prevent the restriction of production from stripper wells known as wells of small and settled production. The reservoir energy in the fields composed of such wells has already been practically exhausted and no conservation would be accomplished by restricting the production of such wells while, on the other hand, conservation might be detrimentally affected since such restriction could readily result in the income from such wells being reduced to the point where the operator could no longer afford to produce the wells and would thus be forced to prematurely abandon these wells, thus causing actual physical waste by preventing the recovery of oil from such reservoirs which would otherwise have been recovered. The other purpose is to allow a sufficient production from each well to permit the well to continue in operation so as to preserve and make available the oil that will be recovered through their continued operation and which could not be accomplished were the production restricted to the point that would result in the income from the production being insufficient to keep the well in operation.

It is not contended that the definition of "waste" under a conservation statute would embrace only the production of oil in excess of market demand. There are many other conditions of actual physical waste, and a conservation statute should define waste as including all of these. It is contended, however, as clearly pointed out above, that the production of oil in excess of market demand inevitably and necessarily results in physical waste; and if it is the intention to prevent physical waste, it will be necessary for the definition of waste to prohibit this form of actual physical waste as well as all other forms and to empower the conservation agency to prevent this form of waste as well as the other forms of waste. No adequate conservation policy can be established or enforced that does not prohibit and provide means to prevent the physical waste involved and necessarily incident to and resulting from the production of oil in excess of the reasonable demands of the market.

Conservation requires that the allowable for a field be fixed at an economically efficient rate of withdrawal that will permit the greatest ultimate economic recovery from the field. Such rate is now usually referred to as the optimum rate. Such course is necessary in order to prevent physical waste. But if there is no reasonable market demand for production at this rate, unratable and unequitable and physically wasteful production inevitably occurs unless the allowable is further cut to balance the demand and thus assure the connection of all wells and the ratable purchase of the oil. Because of the limitations of physical pipe-line outlets, the quality and characteristics of crude produced in different fields, the character of refining facilities employed and individual demand for products, it may not always be possible as a practical matter to maintain a balanced market situation if reliance is placed on regulation of allowable production to optimum rates alone.

Limitation of production to market demand is not only essential as a waste prevention method; it is equally essential to the protection of the small independent producer. It is only by this means that he can be assured of a fair and ratable participation in the markets for oil and of a ratable production of oil from his properties. If this is not done he loses oil to his neighbor by drainage. Furthermore, under such circumstances the price of oil which he produces is forced down, resulting in economic losses as well.

It must be recognized, of course, that any limitation of production, whether to an efficient economic rate of recovery from the reservoir or to reasonable market demand, does incidentally affect price. As stated, any limitation of production naturally does incidentally affect the price so any limitation of production that might be made effective through the application of the provisions of H. R. 7372 would also have its effect on price. The maintenance of a balance between supply and demand for crude does tend generally to stabilize price and to prevent violent and inordinate fluctuations in price; but it does not fix price at any given level. Regulating production to market demand as estimated by the Bureau of Mines is not an artificial restriction of supply for the purpose of raising or fixing price. As stated, it simply permits a more orderly market in which price is more stable than it might otherwise be, but in which the normal forces of a free market, such as cost of production, increasing demand, or relative abundance and reserves have full play in determining price.

If tke conservation agencies of all the States should over a period restrict the production substantially below demand and thus create or maintain a shortage, price-fixing would result.

Mr. Wolverton. Would you say that in view of the action that was taken last August?

Mr. Fell. Yes, sir; I think that the figures in these two tables at the top of the following page will show though that the concept as carried out by these regulatory bodies since the time that the Bureau of Mines first made their estimates, has not been used to restrict production unduly to raise or fix prices, because I think——

Mr. Wolverton. Of course, you say, "unduly." What you mean by unduly and what I mean by unduly may be far apart.

Mr. Fell. Yes, sir; that is right. I mean by "unduly," Mr. Wolverton, this, to bring about inordinately high prices.

When I say unduly, I mean that, of course, in order for conservation to be effective it has got to be at a price that will maintain these wells of small and settled production, in operation. Many of those wells are now producing at a loss. I think the testimony was given by Mr. Breakey with reference to the last cost-of-production surveys that have been made.

Mr. Wolverton. Well, the conception that some of us have had has been that the perfectly proper purpose of obtaining the greatest recovery possible from a well and the limitation of production in order to bring that about, but on the other hand not to a degree that might have a detrimental effect from the standpoint of the consumer and the price he pays. The witness before you has frankly admitted that limitation of production does have an effect on price.

Mr. Fell. Yes, sir.

Mr. Wolverton. You justify it entirely on the basis of conservation and certainly you must acknowledge that it can have the other effect if it is carried too far.

Mr. Fell. Yes, sir; if it were carried too far; I have stated that heretofore.

Mr. Wolverton. It seems to me that from the articles that I read last summer—and I am basing my opinion upon that, because no one else has as yet testified to the exact situation last August, that the action that was taken by the several oil States was because of a fear that the price of oil would drop.

Mr. Fell. Fear that it would drop?

Mr. Wolverton. Yes; and they based that fear upon the fact that one of the major oil companies had reduced its purchasing price.

It seems as if the action was taken to stop it from running a course toward lower prices, by limiting the production or shutting it off so as to create an artificial condition that would keep the price up.

Mr. Fell. I think it is true, Mr. Wolverton, that the figures will show that at the beginning of January 1939 there was an excessive supply of gasoline in above-ground storage; during the first 7 months of 1939 crude-oil storage east of California decreased about 4,000,000 barrels; gasoline stocks had gone up about 8,000,000 barrels; there had been a rather large increase in imports; these increases in gasoline stocks on top of the excess stock at the beginning of the year were no doubt resulting from excess refinery runs. The condition was being aggravated through the excess production in Illinois. Some of the purchasing companies who had been buying oil in other markets had discontinued their purchases in those markets and were getting their oil in Illinois. That had brought about a maladjustment due to the fact that some of the States had not gotten their allowables down to the point where ratable taking had resulted again.

Mr. Wolverton. The situation that you are relating extended over a period of months.

Mr. Fell. Yes, sir.

Mr. Wolverton. It is difficult for me to conceive of it as a growing condition over the period of months, and did not become observable——

Mr. Fell. It was observed.

Mr. Wolverton (continuing). To the oil-producing States until one major company reduced their price and they immediately found that an emergency was existing, which you are now explaining was a growing condition over the period of several months.

Mr. Fell. It was observable, Mr. Wolverton, and I think it was mentioned by different ones in the industry; but apparently it was not effective.

Mr. Wolverton. It seems to me that the only thing that made clear that there must be too much oil, was the fact that a major company reduced its price.

Mr. Fell. That might have been the thing that brought it to their attention; yes, sir. It would naturally be an indication.

Mr. Wolverton. Under your theory, if a major company had reduced its price in January, why then the same result would have obtained, and it would have been necessary to hold a meeting of all of the oil States and their representatives and immediately shut down the production of oil.

Mr. Fell. I think that would depend upon what the conditions were.

Apparently some of the companies did not think that condition justified it or I assume they did not, or they would have cut the price.

One or two or three of them I think probably thought they did and they cut the price.

Now, the reasons why some of them did or some did not, I do not know. I have not discussed it with them.

Mr. Wolverton. Well, the alertness with which the States acted when the first reduction was announced, was certainly intended, and indicated that it was intended to keep others from following suit.

Mr. Fell. Well, I would say this, Mr. Wolverton, had there not been a shut-down, that further restriction of production over a period of time sufficient to eliminate these maladjustments would have had to come.

Mr. Wolverton. Well, it is difficult for me to understand, if this maladjustment you speak of which was a growing condition for months, why it had not become observable to the Bureau of Mines which makes allocations each month to the several States.

Mr. Fell. It was observable, I think, to them.

Mr. Wolverton. Then, it could have been controlled by them during that time?

Mr. Fell. It could have been controlled by the States; yes, sir.

In that period of 7 months it could have been taken care of by restricting production, reducing their allowables gradually over that period.

Mr. Wolverton. Why did not the States do it if it was observed?

Mr. Fell. Well, that is something that I cannot answer, Mr. Wolverton.

Mr. Wolverton. It seems to me that is the crux of the whole thing. You imply there is an explanation, but that it was a condition that did not warrant emergency action, a continuing condition over the period of months during which the Bureau of Mines failed to take recognition of it by limitation of production, and none of the States that were interested in it took action; but, immediately upon one company reducing its price, then the States, not waiting for the Bureau of Mines to pass upon the necessity, immediately jumped into the breach and said, "We will shut down all production."

Now, the shutting down of production in such close proximity to the reduction of the price leads me to think that the two had a direct connection.

Mr. Fell. I might say this: You say you cannot understand why the States did not take cognizance and act upon these conditions that were developing. I think probably, Mr. Wolverton—now, this is just my opinion, you understand—I do not know what their views were, but probably due to the fact that here was another oil-producing State coming into the picture. It was close to consumptive demand and the other States were having to divide their markets. This takes time.

Mr. Wolverton (interposing). That was not the reason that was given in the newspaper account of what Colonel Thompson said. Nor is there any reference to it in any of the statements that I saw by Colonel Thompson. He was bringing to the attention of the States the fact that a major company had reduced its price of oil, and reading between the lines, I assume that he was fearful that it might grow and get out of hand.

Mr. Fell. Well, of course, I could not answer that. I did not talk with him.

Mr. Wolverton. I am not condemning Colonel Thompson or those who took that action. I do not know enough about the situation as yet to express an opinion. I can only say that the impression that it created in my mind was that while there may be proration laws in the interest of conservation, yet, laws with good intent can be used for a purpose that was not intended and against the public interest.

Mr. FELL. My answer to that, the only thing that I can say in that connection, Mr. Wolverton, would be this: That I think that the condition had developed where there was going to have to be either a gradual reduction in allowables in those States, as the Bureau of Mines had indicated by their reductions in allowables that had been coming, and that those States were going to have to reduce those allowables, and it was just a question of whether they were going to reduce them and shut in 15 days, or whether you were going to cut it down over a period of 5, 6, or 7 months.

Mr. WOLVERTON. It seems to me that the attitude of the Department as expressed by Secretary Ickes when he testified before us has some bearing as to what the real situation was.

You have explained it as a perfectly justifiable course of action. On the other hand, when I presented this same situation to Secretary Ickes at the time he testified before us, he was of the opinion, and I assume that he expressed that opinion on the basis of the information he had obtained from the Bureau of Mines, that there was no justification for it as a conservation measure and, he even informed us that he was contemplating advising the President, or suggesting to the President, that he withdraw the cooperation of the Federal Government with the oil-producing States, to the extent of holding up the operation of the Connally Act.

Mr. FELL. Yes, sir.

Mr. WOLVERTON. That power was given to the President in the act, to be exercised, when he was of the opinion that it was being used contrary to the consumer interests.

Now, that is the other side of it. That is, the Department felt that action of the oil States was not justified. You feel that it was justified. I am seeking all of the information I can get on the subject.

Mr. FELL. Let me get that clear to you, Mr. Wolverton. I say that what was accomplished in the way of reducing allowables was justified.

Now, as to how the thing was to be done, I would say this, that had I been doing it I would have started reducing allowables to eliminate these maladjustments before this occurred.

Mr. WOLVERTON. Of course, you are assuming that those were maladjustments.

Mr. FELL. Yes.

Mr. WOLVERTON. And that they needed correction.

Mr. FELL. They did.

Mr. WOLVERTON. Evidently the Bureau of Mines did not think so, because it had not been reflected in the allocations.

Mr. FELL. I think it was reflected in their allocations, Mr. Wolverton, because Illinois produced 12,500,000 barrels over their allocations in the first 7 months of the year; yet the total storage of crude was only reduced 400,000 barrels. That meant that these other States had to take up that slack brought about by the overproduction in Illinois and as a result of these purchases going out of those States, it had left districts with a lack of ratable taking and conditions to which I have just referred.

Mr. Wolverton. That starts a new line of thought.

Mr. Fell. Yes, sir.

Mr. Wolverton. If the action of Illinois could affect so drastically the situation in all of the oil-producing States, then why do you say that you do not favor Federal legislation that would bring a State into the fold of regulation that is unwilling to get in line and is operating to the detriment of all the other States that are willing to act together in the enactment of control legislation?

Mr. Fell. I think the States, as Illinois gets this market, are going to have to, on account of Illinois being closer to the market, make that adjustment.

Mr. Wolverton. Do you not think that such a situation should be corrected?

Mr. Fell. That Illinois should not be permitted to take the market.

Mr. Wolverton. That Illinois should not be permitted to produce to the extent that it is now operating and to the disadvantage of other oil-producing States.

Mr. Fell. I think whenever any new State comes into production, Mr. Wolverton, it is going to have part of the market and that it is going to take time for that State to adjust itself. Mississippi—if Mississippi production goes up, they are going to have to have a part of the market.

Mr. Wolverton. How would you adjust the situation that we are speaking of without Federal legislation in the absence of any action by the States?

Mr. Fell. Well, the States are going to have to take action themselves. They have acted.

Mr. Wolverton. They have, but there is one State that has not. There may be other States that will come into production that may not act in conjunction with the other States and they will just run wild. To make an illustration easily understood, do you feel that any one or more States should be permitted to run wild in the production of oil to the detriment of other States; do you feel that in the absence of any such State enacting legislation, such as the other States have already enacted, that there should be a Federal statute that would bring that State within the sphere of cooperation that the other States have shown?

Mr. Fell. Illinois has had, I think, Mr. Wolverton, one session of the legislature. I am not sure of this. But I think they have only had one session of the legislature since this new production has been found there.

Mr. Wolverton. I am trying to bring to your attention this situation: Suppose that they do not act.

Mr. Fell. Suppose they do not act?

Mr. Wolverton. Yes.

Mr. Fell. If they do not act, I do not believe that the Illinois production will probably exceed 450—say 450,000 barrels a day, based on the best information that I can get; but assuming it went to 500,000 barrels a day; the demand has been increasing about 6 percent. That would be—say we have an increased demand of 210,000 barrels a day in the United States—that would mean that the other States would only have to absorb 240,000 barrels a day. Well, the Illinois peak, the way it is on, the Illinois peak cannot stay on very long, at that rate. So I think that you will either get a law or that the peak will be over in a reasonable time.

Mr. Wolverton. Of course, that does not answer my question as to whether in the event it is affecting the other States detrimentally, whether there should be some Federal regulation that could prevent it.

Mr. Fell. Well, I think that would have to depend, Mr. Wolverton, largely on conditions as they exist.

Mr. Wolverton. Of course, you were very strong for that 5 years ago.

Mr. Fell. Well, you know I have observed a great many things in the intervening 5 years; not only in the operation of the enactment of State laws; enactment of improved State laws; but also the operation of some of the Federal laws and Federal regulations with reference to other industries.

Mr. Wolverton. I will not go into the question as to how long it took you before you changed your mind. I am aware of the fact that some changed their mind very quickly, because the opinion you expressed to this committee with reference to the Thomas-Disney was shared by others.

Mr. Fell. A great many.

Mr. Wolverton. That was when we held hearings in the spring some 5 years ago; but I noticed that by the time the fall came some of them had a different opinion. There was not all of this background of experience and State legislation and that sort of thing then that eventually led you to change your opinion. They changed for some other reason.

Mr. Fell. I remember that very well too, Mr. Wolverton, and there have been other facts that have changed my mind, too. I think some of the experience that we have noted about Federal Government regulations has maybe made some of us think that possibly we would rather put up with some of the defects than to experience regulation such as we might.

Mr. Wolverton. Well, I have had a suspicion that that had something to do with it. [Laughter.]

Mr. Fell. I was not holding that back from any reluctance to make the statement, sir.

Are there any further questions?

Mr. Wolverton. No; go ahead.

Mr. Fell. As a matter of history, the States have not taken advantage of the concept to restrict production unduly to raise or fix prices. This is fully demonstrated by the following table of comparison between production and the Bureau of Mines estimates of market demand during the period such estimates have been made:

	Bureau of Mines estimate of demand	Actual production		Bureau of Mines estimate of demand	Actual production
	Barrels	*Barrels*		*Barrels*	*Barrels*
1934	2,357,400	2,488,000	1937	3,344,400	3,505,000
1935	2,569,500	2,730,000	1938	3,382,800	3,320,000
1936	2,814,100	3,005,000	1939	3,462,800	3,465,000

Mr. Fell. It will be noted that with the single exception of the year 1938 the production year by year has exceeded the Bureau's estimates. During 1938 there was a reduction in production to enable the excessive stores accumulated in 1937 to be worked down to desirable levels and thus to avoid waste incident to stock accumulations and unratable production in the fields.

The principle of restriction of production to market demand by the State conservation agencies began to be employed in 1926. During the period since that time the quality of petroleum products delivered to the public has constantly improved. But during the same period the prices of crude and products have dropped materially. For example, according to Standard Statistics, the price of 36° gravity Kansas and Oklahoma Mid-Continent crude has dropped from $1.95 per barrel in 1926 to $1.02 per barrel in 1939, a reduction of 47 percent. The following table, showing a comparison of the United States Bureau of Labor Statistics wholesale commodity price index for all commodities and for petroleum products during this period, discloses how much more the price of petroleum products has declined than the price of all commodities:

	All commodities	Petroleum products		All commodities	Petroleum products		All commodities	Petroleum products
	Percent	*Percent*		*Percent*	*Percent*		*Percent*	*Perecnt*
1926	100.0	100.0	1931	73.0	61.7	1936	80.8	57.3
1927	95.4	72.6	1932	64.9	45.3	1937	86.3	60.5
1928	96.7	72.0	1933	66.0	41.0	1938	78.6	55.9
1929	95.3	71.3	1934	75.0	50.5	1939	[1] 77.2	[1] 52.3
1930	86.4	71.3	1935	80.0	51.3			

[1] Estimate.

It is thus clear that the use of the concept of limitation of production of crude to market demand has not in fact resulted in price-raising or price-fixing. The public has enjoyed both an improved quality of products and a lowering price. It is believed that if the authority to regulate production to market demand should be abused by limitation below such figure for price-fixing purposes over any substantial period of time, or should be repeatedly done, the procedure would be met by economic legal and political forces that would prevent the establishment of such course as a recognized practice. The regulation of production to reasonable market demand contemplates the maintenance of a balance between supply and demand, not a manipulation of supply below demand for price-fixing purposes.

It is recognized that if a reasonable and stabilized price does result from a balance of supply with demand in contrast to a violently fluctuating price due to recurring oversupply and undersupply and that this will help materially in preventing the premature abandonment of great numbers of stripper wells representing a large proportion of our reserves of crude petroleum. Testimony presented before your subcommittee in 1934 clearly indicated that periods of extremely low prices for crude petroleum were followed by an acceleration in the abandonments of producing wells. Reasonable and stable prices do prevent waste and are, therefore, in the interest of true conservation. No conservation program can be made effective that does not incidentally affect price. Conservation and price are inseparable. This is in no way an argument for the maintenance of high prices that would make possible the continued operation indefinitely of every stripper well in this country regardless of the cost of operation thereof. It is recognized that eventually a well becomes uneconomic and must be abandoned. The point that I desire to make is that reasonably stable prices, at levels around the average cost of production from pumping wells, will permit the continued operation of stripper wells that can economically operate and thus conserve the underlying reserves which it is in the best interest of the public to conserve.

The important fact to bear in mind is that limitation of production to current consumptive demand is a necessary procedure in the prevention of actual physical waste and in assuring to all producers a fair and ratable participation in the market outlet and a fair opportunity to produce their ratable share of the oil. This procedure is essential to a practical functioning of the machinery of conservation.

Any sound conservation program, it seems to me, should be based upon an endeavor to secure the most oil for the least cost for the longest period of time from the known reservoirs and from reservoirs that may be discovered in the future. In effectuating a conservation program it, therefore, seems necessary to me to consider many factors. In closing this presentation there are a few of the conditions involved that I wish to refer to as follows:

1. Conservation, it is self-evident, involves efficient recovery.

2. Efficient recovery cannot be attained without restriction of the rate of production and the rate of flow from fields must be restricted to a maximum that will permit the effective utilization of the reservoir energy available in the field so as to prevent to the greatest extent possible waste of such energy and to secure the greatest ultimate economic yield. The total production from the field should be prorated or allocated on a fair and equitable basis among the wells and properties in the field so that each producer will be afforded an opportunity to recover his pro rata share of the oil and so there will be uniform withdrawals from the entire reservoir. Marginal allowables provide for a slow rate of production and in the effectuating of conservation wells of small and settled production should not be restricted and all wells should have a minimum or marginal allowable daily production sufficiently high to provide, under normal price conditions, a financial return that will make it possible to keep the well on production and prevent its premature abandonment.

3. A slow rate of production requires a larger reserve than does a fast rate of production. With production at a slow rate there must, of course, be a greater number of sources of supply from which to draw than would be required if the oil was produced at a faster rate, so in order to make effective efficient recovery methods there must be larger reserves available from which to draw. These reserves should be kept underground in their natural reservoirs and stocks of crude petroleum and its products should not at any time be in excess of those quantities required to maintain a continuous flow to the consumer and to provide against any reasonable contingencies that might develop.

4. A large reserve cannot be maintained without regulating the supply made available above ground by restricting the rate of flow from the reservoirs. If the supply was not regulated or controlled, it would result as it has in the past in large quantities of excess production and the above-ground physical waste resulting therefrom, together with underground waste and the rapid depletion of the available reserves.

5. Any regulation of supply will naturally have some effect upon price irrespective of the purpose of the regulation. Whether restric-

tion of supply as to an optimum rate of flow or to consumptive demand or to some other basis, it cannot help but incidentally affect price.

6. The minimum effect upon price brought about by any regulation will be under a system where supply is balanced exactly with demand. The organization which I represent has long maintained that a basic requirement of sound conservation of our natural petroleum resources is that there must be a permanent, assured, and effective balance of supply with demand. In other words the three elements of supply, imports, storage withdrawals and domestic production must balance with the two elements of demand, exports and domestic consumptive demand.

7. If supply is regulated to a level either above demand or below demand, a larger effect upon price is created than results when supply is balanced exactly with demand. I believe experience has shown this to be true for in years past when there were periods in which there was a great oversupply and in other periods when there was a great undersupply there were violent fluctuations in price, the price going exceedingly low in periods of great oversupply and excessively high in periods of shortage. While since supply has been kept more closely in balance with demand during recent years, there has not been the wide fluctuations in price but there has been a more even and stable price situation, and, as pointed out in this presentation this result has not been detrimental to the consumer.

Accordingly, if a small rate of production from flush fields, which is essential to conservation, is to be made effective, supply must be regulated and it seems apparent that the most advantageous way in which to regulate supply is one whereby supply and demand would be in exact balance. Such a balance would result in a minimum price effect and would also conform to a basic economic necessity, namely, that under all circumstances supply and demand must tend to balance.

Many of the factors involved in the sound conservation program are not provided for in H. R. 7372 but it does give the commissioner, in my opinion, undue and unwarranted power in that through his acts he would be able to have complete control over the supply of crude petroleum and to handle each field in whatever manner he deemed advisable irrespective of the detrimental effect that might result therefrom. We do not believe that this power is necessary or advisable.

I thank you.

Mr. Wolverton. Thank you.

Mr. Cole has requested me to announce that owing to the fact that the House will have before it tomorrow very important matters that will require the presence of the Members on the floor, and the further fact that the session will start at 11 o'clock, that it will be inadvisable to attempt to hold any hearings of this committee tomorrow, and has therefore requested me to announce that the committee will be adjourned until Monday morning at 10 o'clock.

He is of the opinion that with his knowledge of the number of witnesses who remain, those who will appear personally, those who will put their statements in the record without testifying, that it will be possible to conclude the hearings next week.

The committee will stand adjourned until 10 o'clock Monday morning.

(Thereupon, at 4:10 p. m., the committee adjourned until Monday, February 26, 1940, at 10 a. m.)

PETROLEUM INVESTIGATION

MONDAY, FEBRUARY 26, 1940

House of Representatives,
Subcommittee of the Committee on
Interstate and Foreign Commerce,
Washington, D. C.

The subcommittee met, pursuant to adjournment, in the Committee Room, New House Office Building, at 10 a. m., Hon. William P. Cole, Jr., presiding.

Mr. Cole. The committee will please be in order.

The committee is in receipt of a statement from Hon. Frank Carlson, representing the Sixth District, State of Kansas, with the request that it be inserted in the record. We are glad to have this contribution from Congressman Carlson and it will be inserted at this point.

(The statement referred to is as follows:)

Statement of Hon. Frank Carlson, a Representative in Congress From the State of Kansas

Mr. Carlson. Mr. Chairman, I appreciate very much the opportunity of expressing my views before your committee in regard to the Federal regulation and control of the oil industry. The States are making a determined effort to cope with the problems of this industry through the interstate oil compact. The proration laws and general shut-down in the Mid-Continent field last fall are positive proof that State cooperation can be secured.

I am opposed to the Cole bill because it centralizes power in a Federal bureau in Washington that rightfully belongs to the States. The oil industry has not forgotten the great duplication of efforts, as well as duplication of reports, statistics, and the like that they were subjected to under the Petroleum Code during the N. I. R. A. days. During this period there was a continued overlapping of authority and its division was never clearly drawn. This duplication was confusing and exasperating to the oil industry as a whole and certainly no one would relish a repetition. At that time there was a general assumption that the officials selected by the Federal Government during the code days were without experience in the oil industry. This assumption may have been incorrect, but as a result of past experience, the oil industry is at present very reluctant to approve Federal control again. The ordinary oilman proceeds on the theory that the local matters should be handled by the States as far as possible, even assuming that greater efficiency were theoretically possible should the power be centralized in Washington. The Cole bill under consideration purports to be nothing more than a bill providing for assistance to the State regulatory bodies. However, the bill does provide that if the States do not pass adequate laws or if the States do not properly perform their duties in preventing waste and protecting the operators, the Federal Government would then step in and do what the States had failed to do. Under these conditions they could easily supersede wholly the activity of any State authority.

Those of us who have observed the operations of any Federal agency created in the past few years realize they are never hesitant to exercise authority. The bill under consideration contains no provision for setting further standards for distribution of the allowables among the States or among the fields in a State.

Neither are there restrictions on authority of officials with respect to proration of allowables or distribution of the allowables among the operators in a field. Therefore, this bill would control the situation no better than existing law in most States.

I realize there are one or two States which have not joined with other States in the interstate oil compact, but I believe everyone hopes this situation will be remedied at an early date. This gentleman's agreement between Kansas and Oklahoma was very effective during the shut-down order last August. More than four and a half million barrels of oil were withheld by the Kansas-Oklahoma producers voluntarily during the first 10 days of the shut-down period. Each compact member is legally bound by this Congress-sanctioned body to observe and enact its basic articles. Article II of the compact requires:

"Each State bound hereby agrees that within a reasonable time it will enact laws, or if laws have been enacted, then it agrees to continue the same, in force, to accomplish within reasonable limits the prevention of:

"(*a*) The operation of any oil well with an inefficient gas-oil ratio;

"(*b*) The drowning with water of any stratum capable of producing oil or gas, or both oil and gas in paying quantities;

"(*c*) The avoidable escape into the open air or the wasteful burning of gas from a natural gas well;

"(*d*) The creation of unnecessary, fire hazards;

"(*e*) The drilling, equipping, locating, spacing, or operating of a well or wells so as to bring about physical waste of oil or gas or loss in the ultimate recovery thereof; and

"(*f*) The inefficient, excessive or improper use of the reservoir energy in producing any wells.

With the cooperation of the States producing oil, all agreeing to work effectively for the conservation of oil and gas under the provisions just mentioned, would remedy the oil industry problems. These States should be given further opportunity to work out their own problems.

The Secretary of the Interior, Wilbur, at the historic Colorado Springs meeting in June 1929, said:

"The position of the Federal Government is not to interfere with the rights and duties of the local State governments but to lend such aid as it can and to participate in the solution of the problems. This administration has no desire to concentrate the forces of the Government in Washington. It has every desire to cooperate with the States. The aims sought are uniformity of the conservation laws of the major producing States by the enactment of identical conservation legislation and the uniformity of enforcement by some body, such as a joint commission."

This was sound advice at that time and there is every reason to believe it should be followed at this time. The proponents of Federal control will no doubt point to the fact that the control of this great industry will be far more efficient than the present diversified control. Theoretically, that is probably true. It should be said, however, that the whole theory of government is contrary to that which includes centralization of power and bureaucracy. The evils of centralization or a mild form of dictatorship more than offset the benefits which are likely to accrue.

Let us not be hasty in abandoning local self-government. I thank you.

Mr. COLE. Mr. Brown, whom do you want us to hear first this morning?

Mr. BROWN. Mr. Buttram.

Mr. COLE. Very well, we will be glad to hear you, Mr. Buttram.

STATEMENT OF FRANK BUTTRAM, PRESIDENT, INDEPENDENT PETROLEUM ASSOCIATION, OKLAHOMA CITY, OKLA.

Mr. BUTTRAM. Mr. Chairman and gentlemen of the committee: My name is Frank Buttram, of Oklahoma City. I received my B. A. degree in 1910; M. A. degree in 1912, in geology, from the University of Oklahoma. I have been an operator, royalty owner, landowner since 1914. I am now president of the Independent Petroleum Association of America.

I want to discuss the landowners and royalty owners.

Gentlemen of the committee, petroleum is a part of the land on which home-seeking and home-loving people build their homes. All the petroleum discovered in this country has been found on the farms, the ranches, or the city lots which mean home to American families, with the sole exception of that found on public lands. It is interesting that this great source of energy has been disovered as part of the greatest human institution—the home. In most States petroleum in place is treated by law as real estate, a part of the home which is above it. Every custom, law, or tradition which our people have built up for the protection of the home applies to the protection of the petroleum which is a part of that home. Any violation of these laws and customs that may affect the petroleum is an invasion of the inviolability of the home itself.

This Nation, unlike our neighbors to the south, was built by men who sought not gold but a home. Except for the hectic forty-niners, our people have moved westward from the Atlantic toward the Pacific in search of a home. Involved with that quest was the parallel impulse for freedom.

The difference between the civilization in some other lands and that which we are developing here, based on the home idea, is that in many of these other countries there is only one king while here every citizen is a sovereign. The oil industry illustrates this fundamental difference. In lands where the crown is supreme, all minerals, including petroleum, belong to the king—or whoever may exercise kingly power under any name—and he demands a "royalty" (hence the name) from those who develop them. The crown, for a consideration, issues a grant to someone or some company to develop these minerals beneath the soil. The rights of the home owners on the surface are ignored. The royal grant is supreme. The discovery of petroleum, therefore in countries such as these casts a blight upon the community where it is found. The homemakers vanish. The exploiters—frequently a foreign company—make no contribution to the community where they operate. They are more likely to destroy that community and replace it with their own people—often aliens.

It is different here. Those who wish to produce our mineral resources, including petroleum, must deal with the landowners, the homemakers. They obtain from them a privilege which they could not demand as a right. Each owner of a bit of land if he is a citizen is a sovereign and empowered to make his grants, just as the solitary sovereign ruler of some other lands may do. As part of his payment for the grant to produce the minerals which are part of his home holdings, he receives the "king's eighth," royalty.

Out of these circumstances there arises the fact that the prosperity and well-being of communities is multiplied by the discovery and development of the petroleum resources found beneath these lands. It brings new life to towns and villages, opens wider the gates of opportunity, and supplies to all new sources of income.

The American people have been jealous of their homes. Defense of the home against the writs of assistance, authorizing the quartering of soldiers in the homes of the people, was a factor in the Revolution. It was "embattled farmers," home lovers, who "fired the shot heard around the world" in defense of their homes.

From the beginning the petroleum industry has recognized the right of the landowner and homemaker as the original and unique possessor of this natural resource. It has worked with him. In many thousands of cases, the farmer lives on his land and raises his surface crops while the pumps are bringing up the subterranean crop which, so often, brings him a greater return than his corn or other crops. In my own home town, Oklahoma City, oil derricks stand in the backyard of many a home and even the Governor's mansion is in the shadow of a derrick.

This bill, H. R. 7372, would divide the right of the home owner, the farmer, the rancher, to his own property. It would tell him that he cannot, through those who cultivate his below-ground crop, produce and dispose of any part of it according to the laws of his State. These laws are enacted by his democratically elected representatives. Under this bill he must submit to some distant Government employee who would be given authority to qualify the value of his possessions and their use.

The farmer, rancher, or city dweller who has petroleum as part of his home holdings, accepts the laws, ordinances, and regulations which his State or local authority may impose on him. These are part of his social contract. They are valid because they exist by virtue of an authority conferred by the free ballot of free men. The security of his property, the protection of his home, the safety of his family, the advantages of organized society all derive from that same authority concerning whose selection he has had his part. When, however, he is asked to submit to an order from someone appointed by someone who, in turn, was appointed by someone, the authority is too remote from democratic processes for him to willingly submit to invasion of his rights to determine how he will use his own property, his own home.

The right of contract is involved here. The leases by which the home owner, the farmer, or the rancher authorizes the production of the petroleum which is a part of his land usually contain specific provisions for the operations. This contract which is now binding, will be null and void if some Federal authority had the power to decide whether the performance of that contract would involve what, in his opinion, constituted waste.

In thinking of the petroleum industry let us not dwell too much on the companies with millions of capital, but upon the multitudes of small farmers and ranchers, the home owners who have only a city block, the market gardener who has one crop he never needs to weed. It's their petroleum.

The State is an extension of the home. It is made up of people who live in homes. In many States the people collectively have reserved to themselves large tracts of land. Under some of the land petroleum is found. The people, acting as an organized body in the State, lease the production rights of that petroleum and receive in turn a royalty upon it. This amounts to millions of dollars. The State of Texas is the most notable illustration of the common interest of the citizens of Texas in the petroleum reserves underlying lands held by the State. Many public benefits accrue to the people from these State-owned reserves. The tax burden of every citizen is lightened by the revenues which pour into public treasuries from this source. Under the proposed measure the people of Texas would have no more control of the petroleum which they hold in common as State property than they would have over the petroleum which is a part of their home. In New Mexico the State owns about 60 percent of the known petroleum reserves in that State and in 1938 received an average income of $15,000 per day. From 1917 to 1939 the commissioner of public lands in that State collected $19,671,616.31.

The interest of the home owner in the petroleum industry is of great importance. Based on the year 1939, it is estimated that the petroleum industry pays out approximately $300,000,000 to landowners—most of whom are farmers—for the privilege of developing the petroleum reserves underlying their land. Of this vast sum, slightly more than one-half, or about $160,000,000 represents royalty payments which cover the landowners' interest in oil actually produced. The remaining $140,000,000 is paid in the form of rentals and bonuses for the right to search for and develop petroleum reserves. A large part of this latter amount is spent in unproven areas, and, in many cases, is completely lost as the area proves to be barren or oil.

Some idea of the importance of these rentals, bonuses, and royalties to the farmers may be gained from comparing these payments in 1939 with the income from farm products in several of the important producing States.

	Estimated rentals, bonuses, and royalties paid to landowners in 1939	Cash income from livestock and livestock products in 1939	Cash income from crops in 1939
Texas	$130,000,000	$218,713,000	$223,515
Oklahoma	27,000,000	94,697,000	71,912
Louisiana	27,000,000	26,265,000	86,419
Kansas	12,000,000	161,553,000	79,551

In one single State there are 50 million acres under lease. In that same State 249 out of 254 counties are now under development. Exploratory work is being carried on in this State where initiative and private enterprise have brought to the home owner many millions of dollars from the oil deposits underlying his farm or ranch.

The frontiers, throughout our history, have been pushed out by the adventuring seekers for homes. They have been the pioneers of the face. They have been seeking new lands from the day the first white man landed on our shores. Today we see the direction of our adventure changed. The farmer, the home lover, the landowner is fostering the exploration below the surface of his soil in the search for oil.

This promotion of new discoveries may have merely begun. Under present conditions in the petroleum industry we find new districts, new counties, new States being added to the oil map of the country. Through the influence of this exploratory impulse, countless landowners are receiving millions of dollars in rentals and lease bonuses long before any development work is begun on their properties. I know an independent producer who has leased nearly half a million acres in a State where no oil is being produced. The primary beneficiary of this effort is the landowner. New homes, modern implements for the farm, better breed of sheep and cattle are thus made possible for the farmer. Improved roads, consolidated-school houses and fine office buildings mark the new condition of affairs arising from the income of the landowner from his oil. In short, every civilizing influence has been fostered by it.

From the Canadian border to the Gulf of Mexico, from the Atlantic to the Pacific, there are millions of acres beneath which oil deposits may yet be found. There is no place so remote and no soil so unproductive that it may not cover large deposits of petroleum. The eventual discovery of these fields is hastened by encouragement given to the wildcatter. Private initiative has revealed the many fields already discovered. It will reveal more in the future if the deadening hand of restraint is not laid upon it.

The farmer has long been the enemy of monopoly just as monopoly has long been the enemy of the farmer. The competition in the oil industry has given the farmer the opportunity for the development of his petroleum resources. This bill would create what would be equivalent to a State monopoly. With one man in control of the Nation's oil production, it is doubtful whether the farmer would continue to enjoy the same advantages which have been his under our American system since smaller units to which he must look for his entry into the oil industry would be hard pressed if not eliminated by this measure. The ultimate effect of this bill, even though it should not transfer complete control of the industry to the Federal Government would be to centralize that control in the larger companies and progressively kill off the smaller companies who, because of the financial strain involved in meeting the requirements of operating under this bill would die.

The transfer of part of his royalties from the landowner to others does not affect the argument here presented. On the contrary, the right to sell all or part of the homestead or to determine its use is an essential element in ownership. To deny that would be to reduce landowners to the status of serfs bound to the soil.

The Osage Indians comprise probably the largest group of royalty owners in America. Their mineral rights are retained and owned in common by the members of that tribe. Control of the administration of all their mineral activities is lodged in the Department of the Interior. Let's look at the record.

Oil was first discovered in the Osage Nation in 1903, although leasing began at an earlier date. The history of production in that nation is not unlike the history of the petroleum industry as a whole. In short, the complete and full control exercised by the Department of the Interior did not result in the adoption of any waste prevention measures in the development and operation of their wells that were not used by the industry throughout the entire country.

So the committee may be advised as to the powers assumed by the Interior Department in control of the Osage oil I am quoting the following from "Form B, Oil Mining Lease, Osage Reservation, Okla."

> The Secretary of the Interior may impose restrictions as to time or times for the drilling of wells and as to the production from any well or wells drilled when in his judgment such action may be necessary or proper for the protection of the natural resources of the leased land and the interests of the Osage Tribe of Indians, and in the exercise of his judgment the Secretary may take into consideration among other things, Federal laws, State laws, or regulations by competent Federal or State authorities or lawful agreements among operators regulating either drilling or production, or both.

He must take these into consideration.

I submit the official lease form for the record.

During the period from 1903 up through the year 1938 there was produced from Osage lands 530,000,000 barrels of petroleum. From 1901 to 1936, inclusive, the latest date for which we have figures, there was paid to the Osage Indians for royalties, bonuses and rentals the sum of $257,328,696.93. This money was collected by the Federal Government in trust for 2,229 members of the nation on the final roll. The Government supervised the distribution of these funds to the various members of the tribe. No money was distributed except on the authority of the Bureau of Indian Affairs in the Department of the Interior. In addition to the mineral rights, each member of the tribe had his proportionate share of the surface for his home. We do not have the record of the detailed distribution of these funds but these figures indicate that each "headright" received as his allotted share approximately $116,600.

Mr. Wolverton. You mean every Indian received $116,600 as his portion of the money?

Mr. Buttram. That was his portion. Whether he has received it from the Department, I do not know.

Mr. Wolverton. I wish I was an Indian. [Laughter.]

Mr. Buttram. It might be interesting for this committee to investigate the administration of these oil resources and the funds received from them to ascertain how much waste has been avoided.

I am not saying in this paper that the $116,600 has been fully and completely given to each Indian. We do not know; have no way of knowing how much money is still held in the Department of the Interior for the credit of each Indian. The committee can get that information. I was unable to get it.

Mr. Wolverton. While you are speaking of withholding funds, I remember when the committee made a visit to that section of the State, we were told of a very amusing incident of an Indian who had come into so much wealth and had a great desire to show it, and he bought a car for the use of his family, then bought a town car, and then bought a grand piano, but got tired of the grand piano and left it out in the chicken yard.

Mr. Buttram. You may think that that joke was given just as passing comment, but I truly believe there is more substance to it than you thought at the time.

Mr. Wolverton. No; I had perfect confidence in the person who told me that story.

Mr. Buttram. The bill before us is a prohibition bill. Every section speaks a word of restraint with a single exception. The Commissioner is authorized to say a kind word of approval where he finds no unnecessary waste exists. He may applaud the success of the industry and oil-producing States in eliminating wasteful practices but nothing in this bill gives him authority to promote discovery or development. This bill will provide brakes on the industry's forward movement but offers no motive power.

The landowner stands close to the oil operator. If the operator wastes oil it is the oil of the landowner as well as his own that is wasted. My observation is that the common sense rule to apply to his activities is that what the producer wastes he loses, what he saves he sells.

Good government and conscience suggest that we should first exhaust the powers lodged in the respective States in our efforts to find a solution to our problems. Every opportunity should be given the State authorities to effectively meet their oil problems. The industry has developed those waste-prevention methods which we know and may be expected to develop even better ones. Its record in this respect is excellent.

The evidence shows conclusively that at this time our petroleum resources are not being exhausted by reckless methods. Improved production methods, larger recovery, and greater utilization, rather than waste, have marked its history. It now obtains from crude petroleum a greater quantity of better products at a lower cost than it did even a few years back. To this action by the oil States and the oil industry should be joined cooperative aid by the Federal Government within its proper sphere. We should explore more fully this power of cooperative influence by the Federal Government before we seriously consider invoking the power of force by that Government.

Should the future indicate that the efforts of the industry and of the oil States are not sufficient to reduce waste to a minimum then there may be other methods less drastic than this bill which will aid in so reducing waste. Voluntary agreements within the industry, subject to proper approval, might be one of these methods. Since the evidence shows that no present emergency exists, we should not jeopardize the rights of citizens, plunge a great industry into discord, alter our dual form of government and create conflicting authorities, by enacting this measure. These problems create no emergency. They are not new. The industry and the States face readjustment as each new State goes on the oil map. A time may come when more comprehensive legislation will be required but it is not now.

Mr. Cole. Mr. Buttram, as long as you are speaking to the interest of the royalty owner I would like you to clear up this confusion in my mind. In the early days of production there was allowed, I believe, three percent between the total set to be produced and that left to the refiners. Was that not true?

Mr. Buttram. There was 3 percent deducted when the oil was sold.

Mr. Cole. What was the reason for such reduction?

Mr. Buttram. On the assumption that it was wasted. I have always felt that there was substantially less than 3 percent lost.

Mr. Cole. Why is it Oklahoma continues to deduct 3 percent from the owners in that State; that is, the owner is paid 97 percent; paid for 97 barrels and the purchaser gets 100 barrels. Why is that continued?

Mr. Buttram. Frankly, I think Oklahoma is derelict in its responsibilities and duties. That has been done elsewhere.

Mr. Cole. What do you mean by "it has been done elsewhere"; do you mean that other States deduct 3 percent; pay for 97 percent?

Mr. Buttram. No, I think Texas has some law covering that, but I am not informed in regard to that law.

Mr. Cole. Texas requires settlement for 100 percent.

Mr. Buttram. That is what I understand.

Mr. Cole. Oklahoma and Kansas are paying 97 percent; is that right?

Mr. Buttram. Yes, sir.

Mr. Cole. Then in New Mexico they are paying 98 percent.

Mr. BUTTRAM. I think only a fraction of 1 percent losses are really sustained by the transportation companies.

Mr. COLE. Yes; I agree with you on that, but practically all of the State laws permit—looking now to the interest of the royalty owners and producers—this arbitrary deduction of 3 percent. Take in Oklahoma and Kansas, where they have a production about 220,000,000 barrels a year, it amounts to about $800,000 a year which the royalty owners should be getting from the purchasers of the oil that they do not get, does it not?

Mr. BUTTRAM. I think that is approximately correct.

Mr. COLE. Why is it that the States does not do something to correct this?

Mr. BUTTRAM. Possibly some of us royalty owners have not been sufficiently insistent upon that being done.

Mr. COLE. Well, is it because you could have that done in those States if you tried?

Mr. BUTTRAM. I do not think so. I think if that matter were called to their attention and the proper effort made to correct it, I think it could be done; but you must remember that the average royalty owner is a very little fellow and he is not in a position to go ahead and make any contest and fight it through the courts. That is probably the reason it has never been done.

Mr. COLE. Am I correct in saying that it is a practice which started in the early, very early days of production, because of the losses that existed between the production and delivery to the refineries, which losses no longer exist, because of the improvement over the crude methods of delivery in vogue in those days.

Mr. BUTTRAM. Yes, sir.

Mr. COLE. And yet the purchasers of petroleum are taking advantage of that situation?

Mr. BUTTRAM. Yes, sir. As I stated a moment ago, I do not believe there ever was a differential of 3 percent, or a loss of 3 percent; but there was a much larger loss in the former days than at the present time, which is very, very small.

Mr. COLE. Of course, that is one thing which under the legislation before us would not be tolerated?

Mr. BUTTRAM. But other things might be.

Mr. HOLMES. Mr. Chairman.

Mr. COLE. Mr. Holmes.

Mr. HOLMES. On page 3 of your prepared statement you mention the fact that in one State there are 50,000,000 acres under lease. The thought occurred to me when you called attention to the fact that in that one State there are 50,000,000 acres under lease—and you specify above the income estimated for rentals, bonuses, and royalties paid to landowners as compared with cash income from livestock and livestock products and cash income from other crops, in 1939, and I was wondering if you could give us any idea as to what they get as a Federal income for crop curtailment and for soil conservation in connection with the leases of these 50,000,000 acres? I am asking that question because there seem to be so many acres involved in this leasing and I was given to understand that the lessees, particularly one in California, an oil producer who had extensive leases, in addition to his income for producing petroleum and farming on his property, he also received a check for $7,000 from the Federal Government under both of these headings.

The question occurred to me, in connection with these 50,000,000 acres you mentioned, as to what the Federal Government is paying under soil conservation or crop curtailment programs in this one State.

Mr. BUTTRAM. That information would be very interesting. I do not have it, but I am sure that it is available to the committee if they go to the departments here in Washington.

Mr. HOLMES. Well, it is your understanding that they do participate?

Mr. BUTTRAM. Yes, sir.

Mr. HOLMES. That is my understanding.

Now, I have a few figures here. On January 23 the A. P. carried a story:

> TULSA, OKLA., Jan. 23 (AP).—Crude oil production in the United States increased 71,210 barrels daily to 3,644,592 for the week ended Jan. 20, the Oil and Gas Journal said Tuesday.
>
> Heaviest increase was reported in Illinois, up 31,190 to 366,931. Oklahoma production gained 250 to 423,425; East Texas 92, to 394,493; all Texas, 7,493 to 1,357,628; Louisiana, 3,356, to 270,725; California 5,500 to 618,250; Kansas, 9,150 to 176,650; and Rocky Mountain area, 14,720 to 89,720.
>
> Eastern fields declined 1,050 to 101,000, and Michigan 759 to 64,623.

I also note here that on Monday, January 21, the Interstate Oil Compact Commission had a meeting in Wichita, Kans.

Were you at that meeting, Mr. Buttram.

Mr. BUTTRAM. Yes, sir.

Mr. HOLMES. And at that meeting your committee on supply and demand warned on that day "that the Nation's oil wells are overproducing 'approximately 300,000 barrels a day.' "

Is that right?

Mr. BUTTRAM. Yes, sir.

Mr. HOLMES. Now, I understand that you made this statement at that meeting:

> Frank Buttram of Oklahoma City, president of the Independent Petroleum Association of America told the Compact "there will be no need for the Cole bill or any other form of proposed national regimentation if the regulatory bodies of the oil-producing States will limit production to consumptive demand and thereby prevent waste."

Mr. BUTTRAM. I made that statement.

Mr. HOLMES. Now, after that report was made and attention was called to the fact that you were producing over 300,000 barrels a day surplus, I notice the following week, January 27, the oil producers reduced that amount by 3,284 barrels during that week ending January 27.

Then I find in the following week that it shows a great deal further reduction of production, namely, 129,355 barrels per day.

Now, I haven't any figures beyond those two weeks after the meeting in Wichita. Have the oil producers made any further reductions in the production of oil beyond those figures?

Mr. BUTTRAM. Not any substantial reduction. As a matter of fact, the allocation of permissible production has not yet been set for the following 30 days.

Mr. HOLMES. You mean for February?

Mr. BUTTRAM. No; for March.

Mr. HOLMES. The last figure I had, I think, was the week ending February 6; I believe it was.

Well, you contend that producing 300,000 barrels a day above demand is waste?

Mr. BUTTRAM. If we can agree on what is proper demand, then I would say, "yes." I must say in that connection that there can be an honest difference of opinion as to what constitutes demand. Naturally, with a substantial amount of production, if 3½ million barrels or more, there can be a substantial variation, that is, of from 5, 10, 15, to 20 percent or more, that is an important factor. There could be that variation of the figures.

There are those who feel that the I. P. A. A. statement of 300,000 barrels per day overproduction was entirely too much; but I still feel that there was at that time, and there is now, substantial overproduction; that is, production above consumptive need.

Mr. HOLMES. Have you got storage facilities to take care of a daily overproduction of 300,000 barrels?

Mr. BUTTRAM. Yes, sir; substantial storage facilities are available. The facts are that the industry today is carrying substantially less in storage than it has at any time in the past. They are operating today upon the theory of holding their reserve supply underground rather than above ground. It is much more economical.

Mr. HOLMES. Well, I understood that was your statement at that meeting, and that is why I brought it out at this particular point.

That is all.

Mr. COLE. That is all, Mr. Buttram. Thank you.

Mr. BUTTRAM. Thank you.

STATEMENT OF HON. CARL A. HATCH, A UNITED STATES SENATOR FROM THE STATE OF NEW MEXICO

Mr. COLE. Senator Hatch, we will be very glad to hear you.

Senator HATCH. Mr. Chairman: I do not mean at all to interrupt the proceedings of the committee, because the matter I want to present is merely in reference to the illness of Mr. Dow from my State. Former Lieutenant Governor Dow, as you know, is a member of the compact commission from New Mexico and was scheduled to appear as a witness here before you gentlemen and he took ill. He sent his statement, however, and it was read, but somehow Mr. Dow got the impression that perhaps his illness might be misunderstood and I wanted to appear before you gentlemen and tell you that I personally know Hiram Dow and have known him for many years, and there is not a finer man any place than he is, and when he says he is ill, he is ill. I was at the hotel with him, and he was really quite sick. However, he has recovered now sufficiently, until yesterday he went to New York City on some business, and will be back here Wednesday morning, and that was the point that Mr. Dow wanted me to present, that if there were any questions you gentlemen wanted to ask him or if there is anything he could amplify on the statement that was read, why, he is ready to make himself available to the committee.

Now, he has been away from home several weeks and is anxious to return to New Mexico as quickly as he can. He intends to be here on Wednesday of this week and even after that. He understood that the committee would likely, or desires to hear from Colonel

Thompson, who has also been ill, but who expects to be here later I understand. And, Mr. Dow simply wants to offer himself either on Wednesday when he is here or at any subsequent time the committee would like to hear him, if it so desires.

That was my only purpose in coming here, Mr. Chairman.

Mr. Cole. Senator Hatch, it is very easy for this committee to say that there was never the slightest reason developing during the hearings or at any other time to cause any feeling on the part of Governor Dow, you, or any one else, that the committee was at all suspicious about his absence.

Senator Hatch. I understood that perfectly well, but someone had suggested that to Governor Dow.

Mr. Cole. The high regard that you have expressed for Governor Dow is shared by this committee. We know him personally and Wednesday when he returns, if there is something in addition to what has already been presented on behalf of the State and the compact group and they want the committee to have it, we will be very glad to hear from him.

Senator Hatch. I think that there was nothing that Governor Dow wanted to present unless the committee wanted to examine him or ask him some questions. If the committee does want to do that between now and Wednesday, if you will let me know, I will see that Governor Dow is here.

I thank you very much.

Mr. Cole. Thank you, very much, Senator.

We will hear Mr. Brown.

STATEMENT OF RUSSELL B. BROWN, WASHINGTON, D. C.

Mr. Brown. I appear this morning in somewhat of a duplication of roles in that I appear in a three-fold capacity; that is, I represent, so far as this statement is concerned, the industry committee composed of the Mid-Continent Oil and Gas Association, the American Petroleum Institute, and the Independent Petroleum Association of America, and other industry associations that, to avoid duplication and to facilitate these hearings, have joined to present their opposition to this measure. I am also appearing as the general counsel of the Independent Petroleum Association of America and in that capacity present this resolution adopted by that association at its annual meeting at Fort Worth, Tex., October 20, 1939:

Resolution Adopted at Annual Meeting of the Independent Petroleum Association of America, Fort Worth, tex., October 20, 1939

We have given careful and studious attention to House bill No. 7372, which has been submitted to Congress as the request of the President of the United States of America. The object of this bill is the control and regulation of the oil industry by the Federal Government; and

Whereas the industry, with the assistance of the Interstate Oil Compact Commission, the Bureau of Mines, the Connally Act, and the State regulatory bodies, has made great progress in self-regulation and true conservation; and

Whereas although fully responsive to the need of national unity in times of emergency, we see no national emergency necessitating the passage of such legislation; Therefore be it

Resolved, That this association recommend to the President of the United States and the Congress that the legislation of the type proposed in H. R. 7372 be abandoned; and be it further

Resolved, That we assure the President and the Congress that in case of a national emergency, every State, local, and personal interest will be immediately subordinated to the national welfare and that the industry will promptly cooperate in and conform to the national requirements as may then be determined.

I have also been authorized to make this statement in behalf of the following associations and present resolutions containing such authorization: Independent Petroleum Association of America; Kansas Independent Oil & Gas Association (resolution being sent); Fourth District Stripper Well Association of Oklahoma; West-Central Texas Oil and Gas Association; Oklahoma Stripper Well Association; North Texas Oil and Gas Association; Illinois-Indiana Petroleum Association; Panhandle Producers & Royalty Owners Association; Creek County Stripper Well Association; Kentucky Oil & Gas Association (expect to pass resolution Thursday, February 22); Southern Oklahoma Oil & Gas Association; Ohio Penna Grade Oil Producers' Association; Mid-Continent Oil & Gas Association.

I now present resolutions from the following associations in opposition to this measure: Bradford District Pennsylvania Oil Producers Association; Independent Oil Producers Association of Illinois; American Petroleum Institute; Oil and Gas Association of Michigan; Oil Conservation Board of the State of Montana; San Joaquin Valley Oil Producers Association; Oil Producers' Agency of California; Ohio Petroleum Marketers Association; Kansas Independent Oil and Gas Association.

I also desire to submit a brief prepared by Mr. Tom Anglin, Holdenville, Okla., and Mr. W. J. Holloway, Oklahoma City, Okla.

Mr. Anglin was very seriously hurt in an automobile wreck and was prevented from being here and he has sent it to me and asked that I present it, and I would like to have permission to do that.

Mr. COLE. Very well.

That is the brief that Governor Holloway assisted in preparing?

Mr. BROWN. Governor Holloway and Mr. Anglin collaborated in the preparation of this brief.

Mr. COLE. You want it inserted in the record?

Mr. BROWN. Yes, sir.

Mr. COLE. Very well.

Mr. BROWN. Since the constitutional question has been argued by Mr. Blalock in detail, I think it will not be necessary to read this, but simply to present it for the record.

Mr. COLE. Mr. Brown, do you have some additional copies of the brief which you have just offered?

Mr. BROWN. I think that we have them here, and I will get them for you.

In this statement I am confining myself to discussion of "Propaganda of the Interior Department" since others have set forth other phases of the question.

I have been requested to call the attention of the committee to a joint resolution adopted by the California legislature, a copy of which I can furnish for the record if you have not received it from another source.

I am authorized in each of the capacities above mentioned to speak in opposition to H. R. 7372, the bill before you.

Take this bill, examine it from the first word through the concluding sentence. What can be done under the terms of the bill itself to prevent waste. Outside of employing men to administer under salaries that may be ascertained by reference to other laws, nothing can be done under this law until someone not now known to you prescribes some regulations not now known to him defining some activity now uncertain.

The declared purposes of this bill are beautiful. They express desires and ideals that have grown out of years of experience by men who have had to sacrifice a great deal that we might have a great and valuable industry whose estate the proponents of this measure now want to administer; but the powers defined do not follow the purposes declared.

Since the full powers created by this bill are lodged in the Department of the Interior we think it well to examine the attitude of those who appeared in various places in support of such measure.

It has been conclusively shown, by previous testimony adduced before this committee, that H. R. 7372 originated in and was drafted by and is now being sponsored by the Interior Department.

The witnesses for the Department have appeared, in small part, before this committee, but the primary witnesses for the Department, who have ignored this committee and the Congress, have appeared before the American public: (1) Under the cloak of anonymity; (2) unsworn; (3) not subject to examination and cross-examination; (4) using false and fictitious facts and incidents; (5) employing the facilities of dramatics, sound effects, and so forth; (6) sent out under the guise of entertainment; (7) engaging in propaganda, at Government expense, to influence Federal legislation, in possible defiance of the Hatch Act, recently enacted by Congress.

In brief, the sworn witnesses of the Department deny responsibility for the policy involved in the act.

The unsworn witnesses, who engage in fictional propaganda, are the real sponsors of the act, and the claimed necessity therefor is predicated upon false and nonexistent hypotheses that are anonymously spread by radio broadcast to the American public.

Because of the illuminating nature of the Interior Department's self-exposure in the Department's program of radio broadcasts, it will be outlined for your careful examination.

I have these broadcasts that I refer to with me, in case you care to see them.

The report of the National Emergency Resources Committee of the National Resources Committee transmitted by the President to Congress under date of February 15, 1939, contains the following significant paragraph:

> Whenever the general public becomes sufficiently impressed with the threatened shortage of petroleum products and the possible rises in price sfor motor fuel, then the complex problem of regulating the oil and gas industry is likely to be transferred to the Federal Government.

I have underscored the word impressed because this seems to be the inspiration for, as well as the procedure followed by, the Interior Department in attempting to bring about a demand for this legislation. This probably explains why reason and information have been asked to give way to emotion and fear.

This bill did not come without warning or without a sponsor. I now call your attention to the propaganda calling this bill into existence and urging its support. Here, too, we set forth the Interior

Department's conception of waste so clearly that none can misunderstand it.

For your convenience I now present for the record the official revised script of four radio broadcasts of the Interior Department.

I hope, Mr. Chairman, they can be placed in the record, because I think they are enlightening, and I offer them for that purpose.

We also have noted in these broadcasts such hysteria and melodramatic emotionalism that we feel it would be dangerous to trust the control of a great industry to any governmental agency which is willing to display such a lack of balance and calm in its discussion of so important an economic problem, as is involved in the conduct of the petroleum industry.

These programs, as is repeatedly indicated in the scripts, were intended to persuade citizens to bring pressure to bear upon Congressmen in favor of regulation of petroleum industry by the Interior Department.

In the efforts thus to influence legislation program Number 24 of the Interior Department in its series entitled "What Price America?" on Saturday, July 15, 1939, attacked the petroleum industry over the Columbia Broadcasting system. The essence of this program was the promotion of fear. The official revised copy of the script in its directions for music, sound effects, and statements indicates that clearly. In the opening of the attack, the direction for the music is "up wildly and fade" while the sound direction reads, "suggest utter confusion and hysteria of a population in and under. Automobile horns, in hectic symphony."

Then come in the following utterances one after the other:

DOCTOR. I'm a doctor. I must get there at once. A woman is dying.

ATTENDANT. Sorry, Doc. We haven't a drop of gasoline in the station.

[Sound. Fire siren.]

FIREMAN (shouting). It's the schoolhouse! And we can't move our fire engines!

TRUCKDRIVER (through filter). Listen boss, I'm carryin' perishable goods—fruit and vegetables—on this truck. How am I gonna' get them there before they spoil?

Mr. WOLVERTON. Is all of this happening under the New Deal, all of it at the present time.

Mr. BROWN. Well, they talk about not being able to get to New York on account of the Twentieth Century having stopped running.

TICKET AGENT. The Twentieth Century Limited can't leave this station Madam. You'll have to get to New York by stage coach.

Well, that is getting back to the horse-and-buggy days.

FARMER (surprised). Well I'll be doggone. I can't use my tractor. I can't plow my farm!

HUSBAND (ordering wife)—

That must be a New Dealer—I do not think I know of any husband who can do that.

Mr. WOLVERTON. It is hard to conceive of that.

Mr. BROWN (continuing).

Get the children. We'll leave the house and find a restaurant where they cook with a coal stove.

DISPATCHER (droning via radio). All airplanes are grounded. All airplanes are grounded.

BOSS: You men needn't report to work tomorrow. This plant's shutting down. Can't run our machines without oil.

SOUND: Telegraph key. In and under.

TELEGRAPHER: SOS. SOS. Steamer *American* calling. Stopped in mid-ocean. One thousand aboard. Send help at once.

MAN. Get some candles, Martha, or we won't have light.

ADMIRAL (dictating). To the Navy Department . . . Fleet unable to leave port for Pacific coast as ordered. (Fade) Guns useless without oil. Awaiting further word on. . . .

[Crowd up and fade.]

VOICE. Preposterous . . . ridiculous . . . bunkum . . . rot? . . . No, America, Silly, imaginative, extravagant? . . . No, *indeed*, America. Our *entire modern* civilization depends on oil! It is absolutely irreplaceable. Dissipate this one natural resource of ours, and *that* danger is *our* danger. It would creep upon us slowly, however, softly, so we would not notice at first. (Suddenly) America, the seeds for such a calamity already have been sown . . . are continuing to be sown *now*!

In the same broadcast is given an imaginary picture of Titusville, Pa., when the first oil well was brought in. With all the incitements to hysteria, we find phrases like this:

SECOND VOICE. Gas is blown off into the air . . . gone forever!

OILMAN (coming on). Who wants gas? I'm interested in oil not gas!

THIRD VOICE (quietly). Don't you realize that it's the pressure of gas that forces up the oil? Waste that gas and you lose oil.

(Warning). Soon there won't be any more oil coming out of your well.

Teamsters are pictured as dumping their oil when they are stuck in the mud. "There is plenty more." Dams are cut to let oil barges and rafts rush down stream, smashing some of them and wasting hundreds of gallons of oil.

One of the most unfair presentations is the following:

VOICE. Meanwhile, America lights it homes with kerosene lamps and thinks it's wonderful. Kerosene is what oilmen are after—and curse loudly a bother some byproduct.

THIRD OILMAN (angrily). That darn gasoline * * * more trouble than it's worth!

WORKER. What'll we do with it?

THIRD OILMAN (impatiently). Throw it away. Do anything, but *get rid of it*!

WORKER (suddenly). I know. Tomorrow's the Fourth of July.

SECOND OILMAN (waiting). Yeah?

WORKER. Why not dump that gasoline in the river * * * get all of the other oilmen to do the same. Most of 'em are doing it anyway.

OILMAN (interested). Yeah?

WORKER. Then we'll put a match to it and let it burn * * * what a sight!

OILMAN (laughing loudly). Sure * * * Sure, that's fine! At least that gasoline will give us a laugh. Go ahead! It'll be patriotic!

(Laughs fading.)

That is in the instructions.

The intent of these broadcasts to arouse fear and then anger in the minds of listeners is shown repeatedly in the various programs. In this program No. 36, the narrator tells a shoeblack that oil is used to make shoe-polish and that oil is being wasted. The shoeblack, in the script, is portrayed as "interested," "surprised," "worried," "aroused," "angry," and again "aroused." The shoeblack was the brain-child or the Charlie McCarthy of the Interior Department and they caused him to react as they wished. The shoeblack in Negro dialect declares that he is a citizen and for the purpose of the broadcast he represents the citizens of this Nation whom these programs seek to interest, suprise, worry, arouse, and make angry so that Congress may give the Interior Department control of the petroleum industry.

The narrator in this broadcast makes his charge of waste in petroleum production to a locomotive engineer, to Mrs. Murphy, to a service-station attendant, to a politician as well as to the shoeblack, seeking to influence each of these against the petroleum industry in the interest of a bill like H. R. 7372.

Mr. COLE. Do I understand that H. R. 7372 was mentioned in these broadcasts?

Mr. BROWN. In one. That is, it was so described. I do not know whether the number was given or not. I do not think that the number was given.

Mr. COLE. It was referred to as "pending legislation?"

Mr. BROWN. That is right; one of them referred to it as "pending legislation."

Mr. COLE. That is just as objectionable to this committee as it is to you, Mr. Brown.

Mr. BROWN. I am sure it is. I think I know this committee well, and I think that I know how they would naturally react to that sort of activity.

Mr. WOLVERTON. Mr. Brown, I am sorry that I find it necessary to leave because of an important conference with the Senate conferees on the railroad bill. Before going however I would like to know if this was put out by the authority of the Interior Department?

Mr. BROWN. Yes; it was put out under the authority of the Interior Department. As a matter of fact, a division was set up in the Interior Department, a radio division, and rather elaborate equipment is set up in the building to handle this, probably the most elaborate in the city.

Mr. WOLVERTON. Do you mean equipment was set up in the Interior Department for this purpose?

Mr. BROWN. I mean that equipment was set up for handling the work of it, and a man was hired to do this script writing, and I should say that he is a very apt and very able man and did a very good job from their point of view.

Mr. WOLVERTON. You do not happen to know how much that cost the Interior Department to put this on the air, do you'?

Mr. BROWN. I imagine that the Columbia probably tendered the actual transmission to the Government; but of that I am not sure. But, the preparation of the script and the man hired to write it, of course, was a cost to the Interior Department for that activity and I have a letter that I will introduce later from that man.

Mr. WOLVERTON. Where the characters from the Interior Department's employees?

MR. BROWN. That, I do not know; I do not know whether they were employees or whether he hired special men of peculiar dramatic ability and paid them. I assume someone had to pay them, but that I do not know. I do not have the information on that.

Mr. WOLVERTON. I am sorry that I have to leave under the circumstances. This has been most entertaining.

Mr. BROWN. I am very sorry that you have to go, Mr. Wolverton. I know what duties call you to the other place.

Mr. WOLVERTON. I will take it with me. I will not lose one bit of it.

Mr. BROWN. Thank you.

I would like the brief which I submitted to follow my statement, Mr. Chairman, if possible, so that it will not be in the middle of it.

Mr. COLE. That is all right.

Mr. BROWN. I understand that there was a broadcast this morning. I did not hear it myself, but I understand that there was a broadcast from another department of the Government. I have not been able to get a copy of it yet, but I understand that they recommended 30 percent alcohol be used in all gasolines. I just call that to your attention. It has nothing to do with this.

The desired effect on the radio's listeners is set forth in the effect on the five characters addressed by the narrator. Here they are:

> SHINE. Ah'm sure that smart people livin' all over the country—[Quickly] and there's lots of 'em—they ain't gonna let that oil be wasted like it is fo' long.
>
> ENGINEER. Men like me have got to make their voices heard. We can't afford to waste our oil . . .
>
> MRS. MURPHY. I'm thinkin' that ladies like me, who cook on oil and gas stoves, need oil to make a kitchen a kitchen . . . they're not going to be quiet about this. They're goin' to be sayin' we don't want to see oil wasted any more than we want to see good food wasted.
>
> ATTENDANT. I've got it . . . I'll help! That's what I'm goin' to tell everybody I know. I'm gonna tell 'em the facts like that man told me . . . tell every guy that stops, whether he stops for gasoline, water or free air. I'm gonna tell seven hundred people a week, we gotta conserve our oil not only for ourselves, [fading] but for our kids!
>
> POLITICIAN. If this oil conservation problem is so important that oil reserves have already been set up to protect our Navy, then I'm going to see what I can do to protect my constituents—the every day oil-users, What's more, if it's legislation that we need to conserve our oil, I'm going to lend my support to securing such legislation.

It would be amusing if it were not so tragic to note that in this same program No. 36, the narrator, according to the official script, says:

> I'm speaking for the Department of the Interior, principal guardian of your natural wealth—it wouldn't let me say anything that wasn't so [sincerely].

The word "sincerely" is a part of the script. This is immediately followed by a statement that our present known oil reserves will last only about 13 years or possibly 17 and then, addressing an imaginary Mrs. Murphy, he says:

> You've a Congress that represents you. You can do something about the waste of oil . . . the waste in production, the waste in treating crude, the waste in storage, the waste in transportation, the waste through fire losses.

Just how the Interior Department will be able to stop or reduce any of these so-called wastes is not shown. All of them involve incidental waste. Nothing can be produced without some waste. Nothing can be treated without some waste and so with storage and transportation. Waste from fire losses has long been negligible. Nevertheless Mrs. Murphy is supposed to get in touch with her Congressman and tell him that the Interior Department should take over the oil industry because of these wastes.

Here is the way this broadcast seeks to build up public opinion in support of legislation such as H. R. 7372:

> NARRATOR (beginning). Your Department of the Interior . . . that's the department that looks out for most of your natural resources . . .
>
> VOICE. What's it been doing?
>
> NARRATOR. It's been working on this problem. Only if it's to do a real job of conserving your oil resources for you, it's got to be given the power by Congress.
>
> VOICE. There ought to be something that can be done.
>
> NARRATOR. There is. One way is to create a body in that Department of the Interior to fight the waste of oil for us.

Then the narrator pictures an Interior Department official, after such a law had been passed, addressing the industry thus:

> Well, if you won't stop this waste, then we, the people, will institute legal action to make you do it. Our oil must be conserved!

This "we the people" has a famous precedent. Many years ago the Nine Tailors of Tooley Street published a petition which began with these words, "We, the people of England."

Possibly the most notorious of these broadcasts is program No. 46. Here sound effects represent the gushing of many oil wells while ghosts of the past came back to speak at the narrator's call. One of these, an imaginary Ebenezer Floyd, is supposed to be a small oil producer in Pennsylvania. He tells of overproduction and waste in 1907 and then takes a leap into the future and, supposedly speaking in 1939, says:

> Why, I can look ahead and see when we will have no oil in this country! These are the days to watch out and see that intelligent methods are used in getting the oil out of the ground. Jumping Jehosophat, what have you got a Congress for? What good is legislation unless you use it to conserve your oil?

Since Mr. Floyd's alarm in 1907 concerning the early exhaustion of our petroleum reserves, we have produced approximately 20,000,000,000 barrels of petroleum and still have known reserves of approximately 20,000,000,000 barrels. Through improved recovery methods we are getting more gallons of a better grade of petroleum products from every barrel of oil. We have eliminated much waste that was once considered inevitable and by the double method of improved production technique and larger utilization we have greatly increased the life of every oil field in the country. The Interior Department appears, according to its broadcasts, to be utterly unaware of all this.

Authority for these broadcasts is apparently assumed by Bernard C. Schoenfeld who signs himself "Chief Script Writer, Radio Section" in a letter published in the National Petroleum News for Wednesday, January 31, 1940, which I now present to you.

I will offer that for the record.

The fact that there exists such a seciton with a chief has serious significance. The relation of a Radio Section to the proper work of the Interior Department is not clear. What is clear, however, is that this section, in some respects at least, has been devoting itself to an improper assault upon American industry and especially upon the petroleum industry.

That these broadcasts have, in some degree, accomplished their purpose is indicated by a letter—no doubt one of many similar ones received—which an official of the Interior Department selected to read in the course of an address made at a meeting of distinguished university alumni, since the opening of these hearings. This letter, written by a person who seemed sufficiently impressed with the shortage of petroleum products through the methods above indicated, was selected as the sort of response they sought and the type of mind to which they appealed. That you may understand the use to which the letter was put, I am quoting from the address I just mentioned. [Reading:]

> In this connection let me read you a letter that reached my office a few months ago:
>
> "Dear Uncle Sam: I am only 8½ years, but the waste of oil that is going on its terriffic. And I depend upon you to help us citizens to stop it."
>
> I am happy to inform this particular worried citizen, and others that under the Connally Hot Oil Act of 1935, administered by my Department, steps have been taken to bring some order into the oil mess. However, the question of conservation of oil is primarily up to the States. * * *

A few days ago we celebrated the birthday of Thomas A. Edison. An entire Nation paid tribute to the genius who blessed the world so greatly by his efforts. Yet many of his inventions appear crude and wasteful in the light of his later improvements. His progress could have been greatly hampered by such a section as this now lodged in the Department of the Interior. For a few hundred dollars per year we could hire a man who, given the freedom of the radio as was given this section, could have held the work of this great man up to the ridicule of the uninformed of America until his name might have been jeered instead of cheered as it now is.

So the laughter and mockery with which Deborah Read greeted the young Benjamin Franklin as he strolled Philadelphia's streets with his bread under his arm might have been multiplied a million times until it destroyed one of the greatest careers of our history if the radio had existed then and had some wilful agency in the Government of that time so used it.

These broadcasts, Mr. Chairman, are dishonest. The arrangement of words—the inflection of voice—the melodramatic effects are all designed to create a false impression. Some European countries use this method to dominate a nation but this is something new in the United States.

There is a law which provides for punishment of any officer or employee in the United States who indulges in actions to influence legislation. Here is the way that law reads:

The United States Code, title 18, section 201, "Use of appropriations to pay for personal service to influence Members of Congress to favor or oppose legislation."

> No part of the money appropriated by any act shall, in the absence of express authorization by Congress, be used directly or indirectly to pay for any personal service, advertisement, telegram, telephone, letter, printed or written matter, or other device, intended or designated to influence in any manner a Member of Congress, to favor or oppose, by vote or otherwise, any legislation or appropriation by Congress, whether before or after the introduction of any bill or resolution proposing such legislation or appropriation; but this shall not prevent officers and employees of the United States from communicating to Members of Congress on the request of any Member or to Congress, through the proper official channels, requests for legislation or appropriations which they deem necessary for the efficient conduct of the public business.
>
> Any officer or employee of the United States who, after notice and hearing by the superior officer vested with the power of removing him, is found to have violated or attempted to violate this section, shall be removed by such superior officer from office or employment. Any officer or employee of the United States who violates or attempts to violate this section shall also be guilty of a misdemeanor and on conviction thereof shall be punished by a fine of not more than $500 or by imprisonment for not more than one year, or both. (July 11, 1919, ch. 6, sec. 6, 41 Stat. 68.)

This law is an expression of legislative opinion on propaganda by Government employees designed to bring about legislative activity.

How could the oil men of the country support a measure such as that before us, giving to some subordinate in the Interior Department power to compel the industry to accept its regulations to prevent what it might be pleased to denominate waste, when they have heard the Interior Department's authorized representatives blare to the world its false accusations?

The domestic petroleum industry recognizes that it may expect to meet sincere critics all along the road and is prepared to meet them and to profit from any constructive proposals. It also recognizes that it may expect to meet unfair criticism. It is, however, too much to ask that it stand silently by when an unfair critic, clothed in respectability through employment by the Government and given thus a voice of authority, uses his place as a perch from which to launch dishonest assaults upon the industry. Still worse is it when the very evidence of progress made by the industry is made the basis for these attacks.

A person willing to do these things, or to approve them, or to permit them, in order to obtain legislation for control of the petroleum industry might be willing to do more.

It must be said to the credit of the Columbia Broadcasting System over which these programs were broadcast that, since the exposure of the propaganda by the National Petroleum News, it has discontinued their programs and has announced that hereafter it will, itself, prepare the script for any future Government broadcast.

If the Interior Department broadcasts should be successful and achieve their purpose, they would have effected an unprecedented change in our American system of government. It would mean a bloodless revolution with the transfer of authority over our industrial life from free enterprise to Government dictatorship. The precedent thus established might be followed with other industries until the business life of the Nation was regimented from top to bottom, even as it is today in some other countries of the world. It would be a form of communism or totalitarianism. This Department does not seem to have understood the ideals of the Administration itself in regard to propaganda as set forth by President Roosevelt in his recent address to the American Youth Congress when he told the delegates:

> You have a right peacefully and openly to advocate certain ideals of theoretical communism, but as Americans you have not only a right but a sacred duty to confine your advocacy of changes in law to the methods prescribed by the Constitution of the United States—and you have no American right, by act or deed of any kind, to subvert the government and the Constitution of this Nation.

Here the President has clearly indicated the manner in which, if the people desire, they may change their system of government. To do this obliquely and by indirection in some such manner as is being practiced today by the Interior Department through its advocacy of a Federal oil-control bill is not in harmony with the sound doctrine proclaimed by the President.

Mr. Cole. Mr. Brown, on page 6 of your paper; top of page 6, when the broadcast refers to burning of gasoline; dumping it into the rivers, and so forth—some of that took place, of course, in years gone by?

Mr. Brown. Unquestionably; before they knew what gasoline could be used for; yes.

Mr. Cole. And I suspect, if the Department had stated that the reason for such conditions existing when they did was lack of market for it, the broadcast would have been true instead of false?

Mr. Brown. Yes; but what would have been the purpose of the broadcast, if they had given a true statement?

Mr. Cole. Would you have found anything to criticize about a broadcast of that character in calling attention to the wasteful production of our gasoline in years gone by?

Mr. Brown. If it had been presented as an historical matter, as a matter of historical interest; no. We have books full of it. I have written about it; others write about it, as a matter of historical interest, showing the progress of the industry and showing how it has improved, gone from the known to the unknown; but my objection to this is that its evident purpose is to arouse anger and to arouse intolerance to bring about a given purpose. That is my objection to it.

Mr. Cole. With reference to the dumping of gasoline into the rivers; burning the gasoline in those days, that was a form of waste. We will all concede that it was. Was that because there was no demand for it at that time?

Mr. Brown. That is quite true.

Mr. Cole. I am wondering, when you concede that picture, what your answer is to the wasting of gas to the air today when there is no market for it? Is that something similar to what we agree took place in the past?

Mr. Brown. Well, no; because we know of its uses now and if it is wasted where there is no opportunity to use it or if it is such a waste that it has not already served its purpose, or is too expensive, so that it becomes an economic waste, conditions might be different.

Now, if people deliberately blow gas into the air without any effort to conserve it for future use, of course, that should be corrected, and I think it is being corrected very rapidly.

Mr. Cole. Considerable amounts of it are being blown into the air.

Mr. Brown. I understand that there is some of it yet; but I imagine in each instance that you would find, probably, some circumstance which would give some atmosphere of justification to it.

Mr. Cole. I assure you, in connection with this broadcast, that I have no patience, and I think that the entire committee feels that way, with Government employees who try to influence the passage of legislation in this way. Yet, I can appreciate the concern of some who are working with this problem, in bringing to the attention of the people as best they can the importance of our petroleum resources and some things that are going on in various States and fields as to the waste of such a resource.

For instance, in line with such an interest displayed by the Government—which was carried undoubtedly too far—I have, and I assume you have read it, in the November 1939 issue of the Stanolind Record—Standard Oil Co. of Indiana publication entitled "Petroleum is Indispensable to Modern Living." Because of the various articles and some statistics and charts entered by the American Petroleum Institute, I want to print this article in the record, but I read from the article two paragraphs that I happen to have underscored:

> Deprive the world of petroleum today and automobiles, airplanes, locomotives, trolley cars, and elevators would stop in their tracks, large-scale manufacturing processes would cease, and conveniences and comforts of modern living would be lost. The American scene 80 years ago, when the world's first oil well was drilled in Titusville, Pa.. was the starting point for petroleum's phenomenal rise to the dignity of the essential in living that it is today.
>
> Next to earth, water, and air, petroleum probably is the most widely used substance, the source of more than 300 essential products. It is essential to transportation, fundamental to industry, vital to national defense and, especially in the United States, a source of comfort, convenience, and better living.

Another quotation:

> America's national defense program is built around her vast reserves of oil. Since the World War the number of oil-burning vessels in the Navy, Army transport fleet, and merchant marine has been tremendously increased. Gross tonnage of oil-burning ships in the merchant marine alone increased 13 times between 1914 and 1934.

(The article referred to is as follows:)

PETROLEUM IS INDISPENSABLE TO MODERN LIVING

Deprive the world of petroleum today and automobiles, airplanes, locomotives, trolley cars, and elevators would stop in their tracks, large-scale manufacturing processes would cease, and the conveniences and comforts of modern living would be lost. The American scene 80 years ago, when the world's first oil well was drilled in Titusville, Pa., was the starting point for petroleum's phenomenal rise to the dignity of the essential in living that it is today.

Next to earth, water, and air, petroleum probably is the most widely used substance, the source of more than 300 essential products. It is essential to transportation, fundamental to industry, vital to national defense, and, especially in the United States, a source of comfort, convenience, and better living.

ECONOMIC IMPORTANCE OF PETROLEUM

It is impossible to overestimate the economic importance of petroleum today because every person in the civilized world shares in its social and economic benefits. Industry consumes most of the products made from petroleum, for petroleum lubricating oils and greases are essential to every wheel that turns. The greatest part of the one and one-quarter billion barrels of oil used in the United States last year either lubricated or furnished power for the machinery of transportation. Half a trillion passenger-miles are traveled yearly in passenger motor vehicles, privately owned. Add to this astounding figure 30,000,000,000 ton-miles of commercial transportation by motortrucks and 2,000,000,000 miles traveled by motorbusses—all on roads built by machinery powered by gasoline. And many of the roads are surfaced with products made from petroleum.

Aside from making possible the development of automotive transportation, the petroleum industry supplies the fuels and lubricants necessary to the functioning of every form and medium of transportation—in the sky, on land and water, and under the sea.

Lubricants formerly used, such as those obtained from whale oil, never could have served growing American industry. Whale oil, limited and difficult of production, even today costs $35 a barrel, as compared with approximately $1 for crude oil. There are no substitutes for petroleum lubricants, without which the machine age could not exist. Economical, satisfactory, and constantly available, they have made possible the modern machine technology with its mass production and continuous operation, as well as the generation of electrical power. Thus the petroleum industry has contributed a major part to every increase in the material well-being of the industrial world since 1859.

For heat and power, too, American industry is coming to depend on petroleum. Instant and effective temperature control with oil heat have resulted in bringing 125,000 industrial oil burners to the glass, cement, baking, and allied industries. At the beginning of this year more than a million and a half out of a total of nine million homes with central heating plants were equipped to burn oil, while millions more use oil-burning space heaters and natural or liquid "bottled" gas, also products of the petroleum industry.

Evidence of the industry's adaptability is the variety of the products that emerge from its refineries. Kreosene, man's first satisfactory illuminant, was the sole product comparatively few years ago. The demand for gasoline fuel was met almost overnight. Today oil refineries transform crude oil into hundreds of products in proportions demanded by the public's requirements. The list of the industry's products grows longer every day, as it meets the demands of today and the future.

OIL FOR NATIONAL DEFENSE

Truer today than when Lord Curzon made the statement that "the Allied armies floated to victory in the World War on a sea of oil" is the statement that petroleum is any nation's most indispensable military and naval supply. America's national defense program is built around her vast reserves of oil. Since the World War the number of oil-burning vessels in the Navy, Army transport fleet, and merchant marine has been tremendously increased. Gross tonnage of oil-burning ships in the merchant marine alone increased 13 times between 1914 and 1934. Peacetime requirements of the Navy are about 8,000,000 barrels of fuel oil and a quarter of a million barrels of Diesel oil annually, while the Army's are a million barrels of fuel oil and the Coast Guard's 600,000 barrels of fuel oil and nearly 100,000 barrels of Diesel oil.

Not only does war generate an increased military and naval demand for petroleum products, but its insatiable appetite augments the need for all kinds of petroleum products. Paraffin, for example, gained new importance during the World War, waxed paper and medical dressings were used in large quantities, and candles furnished the light in military quarters as well as in homes where there was a desire to economize on gas and electricity.

Because it was able to mobilize its resources rapidly to meet the tremendously accelerated demand for its products, the petroleum industry met the demands of the World War with but little confusion. It pushed the drilling of wells, erected new refining units and increased bulk storage, thus meeting the enormous demands of the war machines and supplying the country's normal domestic needs as well. If the need ever arises, the industry can do this again.

The petroleum industry employs approximately a million employees, to whom it pays about a billion and a half dollars annually. The United States Bureau of Statistics reports that refinery workers earn 53 percent more per week and 51.4 percent more per hour than the average employee in a manufacturing industry. The oil industry's annual earnings are outstandingly high because of the continuity of employment. An interesting study by the Texas National Youth Administration reported that the oil industry offered Texas youths the best opportunity for employment and high wages of any industry in the State. Oil production was credited with the highest industrial wages in the State and refining with the third highest.

Oil workers enjoy a high continuity of employment. With short hours and steady jobs, there are fewer employee shifts in the oil industry than in other branches of industry. Monthly resignations, discharges, and lay-offs among refinery employees in 1938 averaged 2.07 per 100 employees, as compared with 4.10 for all industry. Working conditions have continuously improved and the number and severity of accidents have decreased remarkably. The frequency of injuries per million hours worked was 12.64 in 1938, as compared with 31.15 in 1927, for the entire oil industry.

As an employer of labor, the oil industry ranks high among all United States industries and the one-and-a-half-billion-dollar pay roll of its million workers generates business for all industry.

Including its annual wage payments to employees, the petroleum industry every year makes a total cash contribution to the national economy of more than $4,000,000,000. Filtering through, this annual payment affects the well-being of practically all industries and, indirectly, every individual in the country; $200,000,000 of this amount is paid out directly to farmers as royalties, bonuses and lease rentals; $875,000,000 to other industries for equipment, supplies, and services; $260,000,000 to the railroads; and $1,300,000,000 in Federal State, and local taxes on the industry and its products.

Widespread social and economic benefits result from the oil industry's operations that in some way reach out and touch every industry and every individual in the country. A typical American industry from its inception, its phenomenal growth is unmatched perhaps by any other industry in history; and it brings better living and a richer life to every American.

Mr. BROWN. May I suggest there, Mr. Chairman, that this thing of conservation has been a matter of progressive development and that the progress has come primarily from certain groups within the industry. You must recognize that it operates in States where the general public as a rule are not—at least, they do not understand the immediate problem of conservation—and had it not been for the oilmen driving for the enactment of these laws it would have been difficult to have gotten as far as we have.

We still have some distance to go, however, and we think we are progressing toward it as rapidly as democracy permits.

Mr. COLE. The broadcast has raised a few questions, or suggested certain subjects, which are pertinent here, and I want to clear up a few points in the record to ask some questions while I have the opportunity.

Mr. Brown, dealing with the position of the Independent Petroleum Association of America as to the August shut-down:

One of the topics (question D) assigned for study to the Committee of Thirty-six of the Independent Petroleum Association of America, appointed October 12, 1938, at Tulsa, Okla., was the resolution offered recommending a total shut-down of all oil-producing States having regulatory bodies.

The Committee of Thirty-six, met at Fort Worth, Tex., on November 11, 1938, and took certain action—were you present at that meeting?

Mr. Brown. Yes.

Mr. Cole. Such action accompanied a report of a special study made by the committee. It recommended:

No Need for Shut-Down

On question D, concerning the "proposed total shut-down in all oil-producing States having regulatory bodies," we believe there is no immediate necessity for and doubtful legal basis on which to found such action.

Have you a copy of the report of the Committee of Thirty-six with you?

Mr. Brown. I haven't it with me. I have it and will be glad to submit it to you, but I do not have it with me. I have it in my office and I will be glad to get it and submit it to you.

Mr. Cole. I would like to have it inserted at this point in the record.

Mr. Brown. I will be glad to get it and bring it to you.

(The report of the Special Study Committee of Thirty-six above referred to is as follows:)

Report of the Special Study Committee of Thirty-six of the Independent Petroleum Association of America

Adopted at the Called Meeting of the Association, Dallas, Tex., June 6, 1939

The following report was adopted at the meeting of the Independent Petroleum Association of America, at Dallas, Tex., June 6, 1939, having been presented by the Special Study Committee of Thirty-six appointed by the president, Charles F. Roeser, in accordance with the following resolution adopted at the ninth annual meeting of the association held at Tulsa, Okla., October 21, 1938:

"Whereas certain proposed resolutions have been submitted to the Resolutions Committee of the Independent Petroleum Association of America by members of such Association, action upon which, in the opinion of the Resolutions Committee, should be deferred until each of such proposed resolutions has been subjected to careful study and consideration by a special committee appointed for such purposes; and

"Whereas the time available during the present sessions of the Association, in Annual Convention assembled, is insufficient for such study and consideration as the seriousness of such proposals require: be it therefore

"*Resolved:* 1. That the President of the Association be, and he is hereby, authorized to appoint a Special Study Committee, consisting of 36 members of the Independent Petroleum Association of America;

"2. That there be, and are hereby, submitted to such Special Committee for study, the proposed resolutions relating to—

"(*a*) Pipe-line divorcement;

"(*b*) Complete disintegration of all integrated companies;

"(*c*) Temporary prohibition of all imports of petroleum and its products;

"(*d*) Recommended total shut-down in all oil-producing states having regulatory bodies;

"(*e*) Umpire to make allocations that are enforceable between oil-producing states;

"(*f*) All other questions submitted to them by the President or Executive Committee.

"3. That such Special Committee make its study and recommendations on each of such proposed resolutions to a special meeting of the members of the Independent Petroleum Association of America to be held in December 1938, on call of the President, or at such other and different time as may be determined by the President and the Executive Committee."

In accordance with paragraph (*f*) of this resolution, the president submitted for the committee's consideration—

(*g*) The question of marketing divorcement;

(*h*) The question of including refinery regulation in the Interstate Oil Compact.

SITUATION WHEN COMMITTEE WAS APPOINTED

These resolutions were the result of conditions which threatened the stability of the industry. Unjustified price cuts were spreading. Neither crude nor refined products were at a proper price level. Supply, from each of the three sources, production, withdrawals from storage, and imports, was high, although not high enough to justify the threat to the whole price structure on a national scale. Selective buying was increasing and taking the place of ratable purchases from a common source of supply. Proration by pipe line was assuming authority which should be vested in and exercised by State agencies. Stripper-well areas were being cut off from connections. Arbitrary power, exercised by a few integrated companies, was dominating producing, refining, and marketing, conducting these operations on such a basis that competition was impossible for independent units or those who had no pipe-line profits with which to subsidize operations conducted at a loss.

The resolutions demonstrated the gravity of the situation and the spirit of the independents in the industry. The special study committee, after weighing all the facts, urged such action by the industry as would remedy the admitted evils without plunging the entire industry into conditions the result of which none could foresee.

These conditions have not all been corrected.

CHANGES IN SITUATION

There have, however, been some changes in the situation since the appointment of this committee. Among them are the following:

The necessity of maintaining a balance between supply and demand has been recognized by some States.

There appears to be a growing recognition of the need of sound conservation laws in some States now without them. Michigan and Arkansas have passed new legislation. Other States have considered the need of regulatory laws.

Michigan has voted to become a signatory to the oil compact. The original signers have renewed their request for congressional approval of the pact with one exception.

Buying has been resumed from some wells where it had been discontinued.

Connections with some stripper wells have been reestablished.

The Securities and Exchange Commission is considering the proposal to require more detailed and separate returns from integrated companies showing profits and losses from each branch of their business.

The Federal Trade Commission has been requested to prevent unfair practices in the marketing branch of the industry and is now considering the approval of a code.

SITUATION AT PRESENT

The present situation is much as follows:

There is still overproduction in certain areas.

The rate of flow in some fields is greatly in excess of that which would accomplish the greatest ultimate economic yield and therefore is in violation of fundamental conservation principles.

Ratable taking from common sources of supply is not followed in several areas.

There is much unnecessary drilling.

Excessive runs to stills are continuing.

Selective buying still exists.

There is some pipe-line proration.

The unsound price structure, based on the finished product rather than on the crude petroleum, is continuing to cause producers to pay for bad practices of the marketing branch. Sound economic practice requires that the price of finished products be based fundamentally on costs, beginning with the raw material.

Price wars, rebates, substitutions, tax evasions and unfair practices in general, over which the producer has no control, are reflecting adversely upon the producing branch of the industry.

Imports have recently shown a marked increase and emphasize the need of additional and more definite restrictions.

FOUR BRANCHES OF INDUSTRY ARE RELATED

Four separate divisions constitute the petroleum industry. They are production, transportation, refining, and marketing. Each of these divisions is essential. Each of them has a direct relation to and is affected by the other three. Some corporations engage in all four of these separate activities. A still larger number of independents are engaged in one or more of these divisions but few are active in all four. The fact that each of these four divisions is part of the movement of petroleum from its crude state in the pool to its delivery as a refined product makes them related parts of that economic unit which we call the petroleum industry. Uneconomic activities on the part of one of these divisions may have a decided effect upon one or more of the other divisions.

Sound economic practice requires that each of these branches be so operated as to justify its own existence. Only such a policy can insure a fair competitive field to those companies which are unintegrated or only partially integrated, or promote healthy conditions in the industry.

When profits are taken from one or more branches of the industry and used to subsidize unfair or uneconomic practices in other branches of the industry, then competitive units are destroyed, demoralization in a greater or lesser degree occurs and not merely the petroleum industry but the industrial health of the Nation is adversely affected.

It is of serious importance that practices such as these should be ended. They might be ended by drastic and severe measures. In the present unsettled situation pervading our national industrial life it might prove disastrous to the separate divisions of our industry if such unusual measures were adopted now.

POSSIBLE RESULTS OF DIVORCEMENT

Fundamentally producers are concerned with two things (*a*) their fair and equitable share of the day's market, (*b*) a compensatory posted price for their product. We do not attempt to definitely prophecy that divorcement and disintegration would permanently, or for that matter immediately or temporarily adversely affect us in either respect, but we are apprehensive that such result could and might ensue.

It is obvious that the large amount of presently shut-in production would in itself, if divorcement and disintegration were brought about, invite the various buyers of crude oil who might come into being under entirely new practices and methods which might then characterize the business, to purchase their oil supplies at the nearest and most convenient points, and also at the lowest possible prices. Such a condition would immediately result in a still further general lowering of crude prices, and there well might be many producers with remote or stripper supplies of oil who would find themselves without any outlets or markets at all.

It has been suggested that in case of divorcement and disintegration many additional independent refineries would be built in the centers of heavy distribution. But those new units in the business would be motivated by a normal and economic desire for profits based on low-priced crude and they would doubtless soon acquire, in active competition with each other, that same gallonage complex which seems to dominate the retailing end of the industry today. This will serve as an example of the numerous reasons why we cannot reach the optimistic conclusion that producers would be benefited at all. On the contrary our best present guess is that our interests would in all probability suffer.

The record does show that, under the existing order, independent producers, have in many instances been harshly and unfairly dealt with. To mention but a few of the reasons therefor we call attention to the practice of those possessing purchasing power to arbitrarily place their purchases in pools and areas where they are also producers, with the result that they market more of their own oil. We further call attention to a general tendency on the part of those engaged in the refining and marketing branches, and this applies to units both large and small, to let the retail price of gasoline determine the price of crude. When it happens that such units, regardless of their size or integrated character, can no longer operate profitably, their thoughts turn always in one direction, and unfortunately for producers that direction is toward the posted price of crude. Having done so, then the whole price structure again moves down to that new base, and they find themselves as badly if not worse off than they were before, and producers of crude have been penalized and punished without such purchasing and refining units having accomplished their objectives at all—that objective being as we have said to reduce their losses, or possibly make a small margin of profit in the manufacturing and marketing end of the business. It is possible that the possession of some of the profits from the producing and transportation end of the business may have made it possible for certain of such units to maintain higher posted prices for crude than it has been possible for smaller units without those profits to maintain. In support of that conjecture we point to the record of recent months. It shows that crude oil price cuts originated with the spread from and among the smaller users and purchasers of crude oil.

We think the real economics of this industry should proceed on a fundamental principle of ratable takings and a compensatory price for crude oil, and we feel that refiners and marketers should get it out of their minds that they can absorb losses of their own making at the expense of the producer. If they would accept such a principle as a basic one which should not be deviated from then presumably they would devise an economically sound solution of their own problems on a fair and equitable basis that would not pass losses of their own creation back to the producer of the raw material.

Theint erstate oil compact and the States, members of the compact which have conservation laws, have accomplished most constructive results in oil and gas conservation, but the compact cannot effectually provide the needed relief unless all oil-producing States have and enforce adequate conservation laws and are signatory to the compact.

INTEGRATED COMPANIES FAIL IN DUTY

We know that the large integrated units are opposed to disintegration and divorcement, but they doubtless realize that these things and probably Federal control as well will come unless they undertake what in substance amounts to the discharge of a public duty. They have failed to assume and discharge that obligation in the recent past. Is it reasonable to suppose that they will continue to fail to do so in the future? If in advance of the final answer to that question these units are disintegrated and if divorcement comes then obviously they no longer have any position to protect that will differ in any way from the position of numerous other units in the industry and they will no longer have any incentive to assume and discharge the public or quasi-public duty that now rests upon them.

We know in view of the Madison indictments that we cannot expect any concerted action by these units, but we believe it is still possible for them to act individually and not in concert and particularly if the various regulatory bodies function as they should, we believe such individual action will bring about a composite result which would protect the consumer and the producer as well.

If the passage of a reasonable period of time discloses that these things cannot, or will not be done; if wells remain unconnected; if there is too much discrimination in purchases among the States, and among pools within the States, and if the producer does not receive a compensatory price for his product—then in such case the independent producer must determine his future course of action.

DIVORCEMENT NOT RECOMMENDED NOW

For these reasons, among others, your committee does not at this time think it advisable to recommend that the transportation of petroleum and its products, including the operation of pipe lines, be divorced from the other branches of the petroleum industry.

Neither do we recommend that the association at this time advocate the divorcement of marketing from other branches of the petroleum industry nor the disintegration of the industry into its four natural divisions.

As a simpler alternative we urge that the integrated companies within the industry take steps immediately to conduct their separate divisions so that each division will justify its own existence and can operate on a proper economic level.

MUST CORRECT TRANSPORTATION PRACTICES

The practices complained of in the transportation division of the petroleum industry must be corrected whether we have divorcement of pipe lines or not. Even if we had this divorcement, we cannot afford to lose sight of the necessity to correct these improper practices. These may not necessarily be confined to pipe-line operations. There may be evils creeping into other modes of transportation which require constant alertness on the part of those who desire to preserve their interest in the petroleum industry.

Pipe lines are now subject to regulations of the Interstate Commerce Commission and as common carriers should be required to respond to such regulations as would correct improper practices now engaged in. However, the industry itself must plead guilty to a failure to exercise the privilege of bringing to the attention of the Interstate Commerce Commission and the various State regulatory bodies having authority over transportation, such improper practices as have grown up within this division of the industry. We should use to the fullest extent the existing machinery to meet just such conditions as are here complained of.

COMMITTEE TO STUDY TRANSPORTATION

We therefore recommend to the Independent Petroleum Association of America that its president be directed to appoint a permanent committee of five members to function in cooperation with the president, executive vice president, and counsel of the association, under the direction and supervision of the executive committee of the association, to study the transportation of crude oil and its products by pipe line, rail, water, truck, or otherwise, and the rates and tariffs governing such transportation to the end that the excessive transportation costs, if any, now prevailing be eliminated and only reasonable and fair rates and tariffs be hereafter approved by the regulatory bodies authorized by law to fix the same.

Furthermore, it is recommended that such committee be authorized, upon approval of the executive committee, to intervene in behalf of, and to arrange for representation of this association in hearings before any regulatory body, Federal or State, having authority over petroleum transportation, when deemed advisable. It is recommended that such committee be further authorized in like manner to appear before congressional and legislative committees and bodies for the purpose of obtaining the passage of any legislation deemed necessary to require the owners thereof to report to the proper legal bodies the cost of all pipe lines now in existence, or hereafter laid, the cost of operating and maintaining the same, the determination of the profits thereof, and the limitation of such profits within reasonable limits, or any other measures necessary to ensure proper practices in petroleum transportation.

REAFFIRM POSITION ON IMPORTS

On question C, concerning "Temporary Prohibition of All Imports of Petroleum and Its Products" we recommend that the association reaffirm the position taken on this question at its annual meeting at Tulsa, Okla., in October 1938, when the following resolution was adopted:

"In the interest of conservation of our petroleum reserves and for further purposes of stabilizing the petroleum industry and thus maintaining its purchasing and employing power, domestic producers of petroleum have accepted limitation of their production. By doing so they have avoided much waste of this irreplaceable natural resource. The Federal Government has given a certain degree of approval to this policy through passage by Congress of the Connally "hot oil" bill, continued authorization of the interstate oil compact and the rejection by Congress of an attempt to prevent the Bureau of Mines from issuing its recommendation of production by States.

"The balance of supply with demand is now accepted, generally, as a vital conservation policy and as an important stabilization factor.

"Imports of petroleum products constitute an important part of our supply. These imports are not subject to the same regulations and the same limitations which have been accepted by the domestic petroleum industry. The excise taxes on these imports, which the recent Congress continued for 2 more years, are not high enough to act as a sufficient barrier to the importation of crude oil or fuel and gas oil.

"Since the domestic petroleum industry is subject to very fixed limitations as to the amount it may supply to the domestic market and the export trade, it would appear to be only fair that foreign imports should have a similar degree of regulation. Therefore, be it

"*Resolved* by the Independent Petroleum Association of America at its annual meeting held in Tulsa, Okla, this 21st day of October 1938, That Congress is hereby petitioned to impose an adequate tariff on imports of petroleum and its products, and that until such time as this tariff may be adopted the present excise taxes on imports of crude oil and fuel and gas oil be increased from one-half cent to 1 cent per gallon, and that new excise taxes of $2 per ton be levied upon imports of asphalt, natural or otherwise.

"*It is further resolved*, That Congress is hereby petitioned to adopt legislation restricting the imports of crude petroleum and its products to an amount not in excess of 4.5 percent of the consumptive demand in this country as estimated by the United States Bureau of Mines.

"*It is further resolved*, That Congress is hereby petitioned to repeal that section of the Revenue Act of 1932 which exempts from excise taxes importations of crude petroleum and its products used for the supplies of vessels."

NO NEED FOR SHUT-DOWN

On question D, concerning the "Proposed Total Shut-down in All Oil Producing States Having Regulatory Bodies," we believe there is no immediate necessity for and doubtful legal basis on which to found such action.

FEDERAL UMPIRE TO MAKE ALLOCATIONS

On question E, concerning "An Umpire To Make Allocations That Are Enforceable Between Oil Producing States", the committee has given much consideration to the proposal heretofore submitted by Amos L. Beaty in the form of a suggested bill to be presented to Congress providing for a Federal umpire to make allocations of crude-oil production enforceable between the States. A copy of this bill is in the appendix.

It is felt that this subject is so far reaching that it deserves a more complete study. Your committee therefore recommends the continuation of this study by the special study committee until the next annual meeting of this association unless conditions justify an earlier report. We believe that during this period the Temporary National Economic Committee will have held its hearings and we will have the benefit of additional information developed in them.

SPECIAL COMMITTEE PROPOSED

Your committee recommends that the association approve the appointment of a committee of five, of which the president is the chairman, to undertake to accomplish the following objectives:

First. To expedite the approval by the Federal Trade Commission of the code of fair competition that has been submitted to the Commission by the oil industry; and failing to obtain its prompt approval, to ascertain the specific objections thereto in its present form that have been lodged against it, either by the Federal Trade Commission or the Department of Justice.

Second. To ascertain the cost of a study and the time necessary to complete a study of the problems of the oil industry from the refinery to the consumer in the refining and marketing branches of the industry and to determine the effect of these practices on the producing branch of the oil industry, and to ascertain the availability of the Harvard University, the Wharton School of Finance, the Brookings Institute, and similar organizations to make such study.

Third. To ascertain whether or not it is lawful and feasible, and if so, then to undertake to have the Securities and Exchange Commission require that all integrated companies listed and reporting to the Securities and Exchange Commission to make annual statements of the result of their financial operations in the four departments of such integrated companies, to wit: Production, transportation, refining, and marketing.

VOLUNTARY AGREEMENTS WITHIN INDUSTRY

On the question of "Refinery Regulation Under the Compact," no recommendation is made concerning the compact. It was, however, voted to recommend that Congress be requested to pass legislation authorizing voluntary agreements within all basic industries affecting industrial operations, such voluntary agreements to be subject to the approval of a proper governmental agency, and that when so approved those operating under said agreements should be exempt from penalties under the various antitrust laws, such act of Congress to also provide that Congress might withdraw the immunity granted upon proof of violation of the provisions of such agreements.

THREAT IN ANTITRUST-LAW INTERPRETATIONS

Under the inspiration of the necessity of preserving a place in industry for sound competitive conditions, such as the independents in the petroleum industry seek, the Congress of the United States passed legislation known as the antitrust laws. Under the operation of these laws, a great number of individuals have entered the petroleum industry and created and maintained for a number of years wholesome competitive conditions as well as industrial developments. What was created for the benefit of industry is often used as a threat against its welfare. This is so much so that the competition once assured by these acts is now being destroyed by the threat resulting from their improper and novel interpretation.

We reaffirm our faith in the value of these laws and our belief in their merits. But in the confusion resulting from current interpretations we are often uncertain and insecure in the conduct of normal activities essential to our best operation. This should not be. There should be a program of confidence under which industry could conduct its normal operations, assuring economic stability to employees, to the industry, and to consumers alike. This could be accomplished by the authorization of voluntary agreements within the industry subject to the approval of some designated Federal agency. We, therefore, recommend that this association renew and reaffirm its request to Congress for such authorization.

CONTINUANCE OF COMMITTEE

In view of the constantly changing situation and in view of the necessity of continued study of these problems, your Committee respectfully suggests that it be authorized to continue its work until the coming Annual Meeting.

APPENDIX

PROPOSED BILL TO FURTHER REGULATE INTERSTATE AND FOREIGN COMMERCE IN PETROLEUM

By Amos L. Beaty

AN ACT to amend and extend the Act approved February 22, 1935, Public Act No. 14, 74th Congress, and to further regulate interstate and foreign commerce in petroleum so as to bring about, through factual studies, and Federal intervention if necessary, fair and equitable ratios among and within the producing states and aid them in conserving this natural resource and preventing waste, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

SECTION 1. In this Act, the term "interstate commerce" is used in its broadest sense and includes commerce with foreign nations and among the several States; "intrastate commerce" means commence wholly within a state and which is not interstate commerce; "market demand" means demand for consumption in the United States, including the District of Columbia and all territories and possessions of the United States, and for export from the United States; "person" means any natural or artificial person, including corporations, joint-stock companies, common-law trusts, associations, partnerships, executors, administrators, receivers, and trustees; "month" means the calendar month, and "barrel" means 42 gallons.

SEC. 2. The Secretary of the Interior shall administer this Act. Without regard to the civil service laws but subject to the Classification Act of 1923, as amended, he may designate or appoint such bureaus, boards, assistants, and agents as to him may seem necessary, with such authority as he may delegate. References in this Act to the Secretary of the Interior mean the Secretary acting directly or through others whom he may authorize to act for him.

SEC. 3. The Secretary of the Interior shall prescribe and promulgate such rules and regulations as may be reasonable and necessary for the purpose of carrying out the provisions of this Act, including the requirement of sworn reports and complete data from operators and the production of their books and records, the issuance of certificate of clearance for crude petroleum or products thereof which may move in interstate commerce, the giving of public notice of hearings, and the publication of estimates and forecasts.

SEC. 4. The Secretary of the Interior shall make such investigations, assemble such statistics, and carry on such factual studies as will enable him with reasonable accuracy (a) to estimate and publish each month (1) the quantity of crude petroleum previously produced in the United States and in each producing State from month to month over a period of not less than one year and (2) the market demand which existed for the production of each state in each month and (b) to forecast and publish by the tenth day of each month the market demand for crude petroleum to be produced in the United States and in each producing state during the ensuing month; and he shall accordingly make and so publish such estimates and forecasts. For states in which radically varying grades of crude petroleum are produced, estimates and forecasts shall separate the grades under general classifications, such as light crude and heavy crude, with approximate range of gravities for each, or under other suitable classifications, all in the discretion of the Secretary of the Interior. In making forecasts, national and state, the Secretary of the Interior, in addition to considering past and current market demand and the trend, shall take into consideration and give effect to (1) anticipated imports (2) expected drafts upon storage which will not result in shortage of supply and (3) expected additions to storage which will not result in excessive stocks above ground, and (4) such other factors, similar or dissimilar, as may be found essential to just and reasonable ascertainment, all with due regard to the prevention of waste and the balancing of supply with demand. The quantity forecast for each state shall be its just and reasonable share of national market demand. A certificate or official statement shall be made by the Secretary of the Interior in each instance that he has considered and given effect to the factors here enumerated, and it shall be prima facie evidence that he has done so.

Sec. 5. So long as the production in any state, as estimated by the Secretary of the Interior, does not exceed the quantity previously forecast under Section 4 as the market demand for crude petroleum to be produced in such state during the corresponding period, there shall be no Federal intervention under this Act in that state. But if in any month the production of crude petroleum in any state or states, as estimated by the Secretary of the Interior, shall exceed the forecast for that month of market demand for crude petroleum to be produced in such state or states, and if the Secretary of the Interior further finds that a substantial portion of such excess production or the products thereof have moved in interstate commerce to the material detriment of other states or operators therein or the public, the Secretary of the Interior shall at once declare Federal intervention in such state or states and fix the effective date not more than thirty days from the date of such findings and declaration. And the Secretary of the Interior in the same event shall establish and thereafter while deemed necessary maintain an office in each such state.

Sec. 6. The Secretary of the Interior shall thereupon and from month to month while Federal intervention continues, ascertain and record in his state office, subject to public inspection, a just and reasonable quantity and portion, or well share, of the market demand, as forecast for the state, including both interstate and intrastate commerce, for each and every well in the state, on a monthly or daily basis, as to the Secretary of the Interior may seem best for administrative purposes: Provided, however, that the quantity for no well which is found to be incapable of producing more than ten barrels of crude petroleum daily shall be stated at less than its potential; and provided further that for areas where the just and reasonable quantity for all wells is ascertained to be their full potentials, wells may be grouped and quantities stated for the fields, pools or areas. For the first month after the effective date of Federal intervention in any state ascertainment of well shares shall be upon such information as the Secretary of the Interior may have or can readily obtain and without a public hearing, subject to adjustment in later months; but thereafter no ascertainmentof well shares shall be deemed complete until after public hearing in the state, of which reasonable published notice shall be given in each instance. And, while Federal intervention exists in any state, public hearings, of which such notice shall be given, shall be held before forecasts are made and published under Section 4. In ascertaining well shares the Secretary of the Interior shall accept and follow any laws of the state governing production and proration, and the orders, rules and regulations of state authorities made under and in accordance with such laws, so far as this may be done within market demand for production in the state, as ascertained and forecast under Section 4. In the absence of such state laws, orders, rules and regulations, he shall, in the ascertainment of well shares, determine the market demand as to each field or pool, within the limit of his forecast for the state, and, after allowing ten barrels daily to each well capable of producing that quantity or more, apportion the balance for the field or pool among the wells therein according to well potentials, as determined by him: Provided, however, that where wells are drilled on closer spacing than he finds to be reasonable and proper for the field or pool a reduction shall be made proportionate to acreage. Thus, for example, where reasonable and proper spacing is found to be one well on ten acres of land, and a well is drilled on a two-acre site, the well share above ten barrels daily shall be one-fifth of what it would be if the site consisted of ten acres.

Sec. 7. The Secretary of the Interior shall require reports of operators and otherwise take such steps and measures as will enable him to determine whether his orders and findings have been and are being complied with. He shall compile and post or keep open to public inspection at his state office a complete list headed or entitled "Excluded from Interstate Commerce." This list shall show those wells, if any in the state, from which movements into commerce, interstate and intrastate both included, are found by the Secretary of the Interior to have exceeded on the whole the applicable well shares during Federal intervention. It shall contain the name and location of each such well and the name of the owner or operator if known, or so much of this information as the Secretary of the Interior may have available. The list shall also include any storage tanks, other than tanks directly connected to wells, into which the Secretary of the Interior finds that crude petroleum produced in excess of well shares has been run, together with such definite location and description as the Secretary of the Interior from information obtained may be able to give. Wells and tanks thus listed shall be deemed posted and so long as they remain posted crude petroleum therefrom is excluded from interstate commerce. Likewise, and regardless of postings, there is hereby excluded from interstate commerce all crude petroleum produced in excess of well shares, or which, together with movements to storage and in intrastate commerce, results in such excess, if the person receiving the same knows or has good reason to believe that well shares are being exceeded. The Secretary of the Interior shall cancel a posting and remove the well or tank from the list upon a showing by the owner or operator and a finding by the Secretary of the Interior (1) in case of a well, that the owner or operator has reduced his production so as to conform on the whole to well shares determined from the beginning of Federal intervention, provided such adjustment is found to cover all wells in the state owned or controlled by such owner or operator, or (2) in case of a tank, that it no longer contains any crude petroleum produced in excess of well shares and that the owner or operator has agreed that he will not in the future violate the provisions of this Act or any order, rule or regulation made hereunder. But such cancellation of posting and removal from the list shall not affect any penalties that may have accrued. The Secretary of the Interior may post any well or tank in connection with which the owner or operator fails to give full and true information upon request. For the purposes of this Act flow tanks or those to which a well is directly connected shall be deemed parts of the well.

SEC. 8. When Federal intervention under this Act is in effect in a state it shall be unlawful,

(1) For the owner or operator to sell, exchange, deliver or otherwise place in interstate commerce, directly or indirectly, any crude petroleum from a posted well or tank in the state, or any crude petroleum from a well in the state when such transaction, alone or together with movements to storage or in intrastate commerce, results in a well share being exceeded, or

(2) For any person by such method to so place in interstate commerce, directly or indirectly, any product derived wholly or partially from crude petroleum which under this Act is excluded from interstate commerce, knowing or having good reason to believe that the product was so derived, or

(3) For any person to purchase, acquire, receive, or otherwise obtain in interstate commerce, from the owner or operator of a well or tank any crude petroleum which under this act is excluded from interstate commerce, or

(4) For any person to purchase, acquire, receive, or otherwise obtain in interstate commerce any product, derived wholly or partially from crude petroleum which under this Act is excluded from interstate commerce knowing or having good reason to believe that the product was so derived.

Transactions in intrastate commerce which substantially affect interstate commerce shall be deemed interstate commerce for the purpose of this Act, and if while Federal intervention is in effect in any state there shall be produced from any well in such state crude petroleum in excess of its share in commerce, interstate and intrastate commerce both considered, and if such excess of any product derived wholly or partially therefrom shall move in intrastate commerce under circumstances such as either alone or in connection with other similar movements to substantially affect interstate commerce such movements shall be held to have occurred in interstate commerce. A finding of the Secretary of the Interior as to the effect of such intrastate transactions upon interstate commerce shall be prima facie evidence of the fact.

SEC. 9. Any person who violates a provision of this Act or any valid rule or regulation prescribed hereunder, or who willfully refuses to obey any reasonable order of the Secretary of the Interior made hereunder, or who intentially aids or abets another who is guilty in any such respect, shall upon conviction be punished by a fine not exceeding $2,000, and any person who violates Section 8 of this Act shall upon conviction be punished by an additional fine equal to the value of the crude petroleum or products thereof involved in the transaction. Proceedings to recover such fines shall be brought by and in the name of the United States and shall be governed by Section 10 of the Act approved February 22, 1935, so far as applicable.

SEC. 10. If any person fails or neglects to obey or observe any order, rule, regulation, or determination made hereunder, while the same is in effect, the Secretary of the Interior or the United States by its Attorney General may apply to an appropriate district court of the United States for the enforcement of the same, and the Court shall have power to enforce obedience and observance by a writ of injunction or other proper process, mandatory or otherwise.

SEC. 11. Any state or person adversely affected by any decision, order, rule, or regulation made under this Act, or by any act done or threatened hereunder, having presented a petition for relief to the Secretary of the Interior, which has not been granted within ten days after presentation, may seek relief by a suit for injunction or otherwise in an appropriate district court of the United States. The suit shall be tried in accordance with general equity principles: Provided, however, that no temporary, permanent, or other injunction, restraining order, or writ shall issue in such suit unless and until the case shall have been heard and determined by a court constituted of three judges in the same manner as provided in Section 380 of Title 28 of the United States Code, which section and the procedure thereof are hereby extended and enlarged to include such cases; and courts so constituted shall have power to grant full and complete relief. This remedy for such causes of action shall be exclusive.

SEC. 12. No common carrier refusing to accept petroleum or petroleum products for transportation from a state where Federal intervention is in effect shall be liable on account of such refusal if the shipper fails to present a certificate of clearance covering the shipment tendered, and no common carrier shall be subject to any penalty under this Act in any case where such carrier has covering the shipment a certificate of clearance which on its face appears to be valid and to have been issued by the Secretary of the Interior under this Act, or if such carrier, as respects any shipment originating in an area where certificates of clearance are not required under authority of this Act, has no reasonable ground for believing that the petroleum or product thereof is excluded from interstate commerce. The Secretary of the Interior shall issue certificates of clearance upon request in all proper cases.

SEC. 13. Federal intervention may occur in any state or states as often as conditions may warrant, as in this Act provided and under it determined. It may be suspended by the Secretary of the Interior with the approval of the President of the United States as to any state or states when the Secretary of the Interior decides that conditions requiring such intervention no longer there exist and that there is no reasonable probability of recurrence. It shall be so suspended as to any state wherein the production of crude petroleum, as estimated by the Secretary of the Interior, for three consecutive months has not exceeded forecasts for the State under Section 4.

SEC. 14. If any provision of this Act or any clause, sentence, or part hereof shall be held unconstitutional or invalid for any reason, or the applicability thereof to any person, circumstance, commodity, or class of transactions shall be held invalid, the validity of the remainder of the Act and the applicability thereof to other persons, circumstances, commodities, and classes of transactions shall not be affected thereby.

SEC. 15. Section 13 of the Act approved February 22, 1935, Public Act No. 14, 74th Congress, is hereby repealed and the remainder of said Act is hereby extended and continued in effect, without date of termination, so far as the same is not in conflict with the provisions hereof.

* * * * * * *

[NOTE.—This draft differs from the previous draft particularly in sections 4, 6 and 13. Slight changes occur in other sections to simplify and strengthen the provisions.

[The writer reached the conclusion that in section 4 there need be mentioned no factors except those now specified, but that in section 6 a more definite standard or basis of decision should be stated.

[If deemed necessary, a section can be inserted on the subject of imports and the subsequent sections renumbered. A. L. B.]

Mr. COLE. What if anything have you to say, Mr. Brown, as to that decision made after extensive studies?

Mr. BROWN. I think the decision then was based on a lot of very careful thought and study, and I find it very easy to agree with the conclusions reached at that time. It was a definite permanent policy upon which the report was being made, a foundation for a permanent policy, and I doubted very seriously at that time whether there was legal authority for it.

We took the position that that was a problem for the various State bodies to correct if there was a need for it. If there was too much oil that would naturally cause people to think that a shut-down was the remedy. Too much oil was the outgrowth, probably the outgrowth of improper orders, or lack of supervision of the orders in various State bodies, and, therefore, it should be corrected by them as individuals.

Mr. Cole. Well, as to the meeting of August 15, 1939, in Oklahoma City. Did you attend that meeting?

Mr. Brown. Yes, sir. I did not attend the compact meeting. I attended the meeting at Oklahoma City of a number of independent producers at the same time.

Mr. Cole. Yes.

Mr. Brown. But I was not in attendance at the compact meeting.

Mr. Cole. Did you present at that meeting the position of the Independent Petroleum Association as recommended to you by this highly intelligent committee of thirty-six?

Mr. Brown. No; I did not go before it.

Mr. Cole. After almost a year and a half's study——

Mr. Brown (interposing). I did not go before them at all. At that time, part of the States had already shut down and as a matter of fact there was no place or opportunity to present it. At least, it was not presented to the Interstate Compact Commission, I will say that.

Mr. Cole. But, on August 15, while you did not appear before them, the oil group, your group, did draft a set of resolutions?

Mr. Brown. That is right.

Mr. Cole. Which were presented to the compact commission and State regulatory bodies?

Mr. Brown. That is right.

Mr. Cole. The resolutions were formed at a conference between you, the president of the independent association, the executive vice president, and quite a number of others.

Mr. Brown. That is right.

Mr. Cole. In the resolutions which you passed on to Colonel Thompson and the others of the Interstate Compact Commission—do you have copies of those with you?

Mr. Brown. I do not. I can get them.

Mr. Cole. They are available?

Mr. Brown. Yes. I do not have a complete copy with me.

Mr. Cole. I would like to have them inserted in the record at this time.

Mr. Brown. I will do that.

Mr. Cole. Returning to a few of the recommendations made, especially No. 4, for instance, which reads:

> 4. That the Interstate Compact Commission call attention in a favorable manner to the following recommendations which we now make to the regulatory bodies:
>
> That following the 15-day shut-down period above referred to, production of crude oil be held sufficiently below current consumption so that by May 1, 1940, stocks of crude oil and the products thereof be reduced to a proper working

level, and that thereafter production be held currently within consumptive demand.

Is that being done?

Mr. Brown. No; I do not think so; not at all.

Mr. Cole. There is not much doubt but that it has not been done?

Mr. Brown. The gasoline stocks have increased very rapidly. They certainly have not followed that.

Mr. Cole. The rapid increase in stocks we witness today is in direct violation of that recommendation?

Mr. Brown. That is quite true; yes.

Mr. Cole. And you further recommended, No. 5, to the Interstate Compact Commission, that is, this meeting not many months ago:

> 5. That the regulatory bodies of the several oil-producing States be urged to recheck the allocation of production of oil to the various fields to determine inequalities, if such exist, and that such adjustments as may be needed to correct such conditions be made effective by September 1, 1939, and that thereafter whenever requests for special allowable or exceptions are presented, that the regulatory body to whom the same may be presented hear the same at the general or special open hearing next following the giving of 10 days' notice of the pendency of any such application, such notice, if not otherwise provided, to be incorporated in the call for such meeting.

Was that recommendation complied with?

Mr. Brown. To some extent; not fully. But we have had a lot of trouble with that since then. If you will observe, the temper of that meeting was not to approve the temporary action by those bodies that had shut down; but to form a program to avoid the necessity of that sort of thing in the future, and if they comply with those suggestions, we point out, we feel they could avoid the necessity for shutting down from time to time.

We were trying to help them in a constructive way there.

Mr. Cole. Then another recommendation, No. 6:

> 6. That the regulatory bodies of the several oil-producing States be urged to reexamine all fields to determine whether any physical waste is resulting from the present rate of production therein and, if so, to immediately reduce the production if any such field so as to correct such condition.

Within your knowledge, what States, if any, reexamined their fields?

Mr. Brown. I think nearly every State that was closed down used that period to make a general survey. I do not know in what detail—certainly not a detailed survey. I do not think they have gone into the detail we hoped they would.

Mr. Cole. I asked practically every State appearing here is such studies had been made and what the results were, and I do not recall any of them placed in the record the results of such study following the shut-down, do you?

Mr. Brown. I do not remember what their answers to that were; but I do know what happened. For instance, as producers we created, and I believe it was suggested in the resolution there—I know it was—that the thought of that meeting was to create a responsibility and someone in each State to check personally, ourselves, into these matters where inequities had crept into the practices in that particular field and to call that inequity to the attention of the regulatory body, and I think that a very great number of them did do that. As a matter of fact they created a special group with the responsibility of making that effective and that was done rather generally through the States.

Mr. Cole. Do you have a list of the committee of thirty-six to which I referred?

Mr. Brown.—Yes; I have that—not with me—but I have it available.

Mr. Cole. I would like to have that put in the record at this point.

Mr. Brown. All right.

(The list of the committee above referred to is as follows:)

Special Study Committee of Thirty-Six, Independent Petroleum Association of America

(Appointed by Charles F. Roeser, president, under authority of the annual meeting of the association, Tulsa, Okla., October 21, 1938)

Wirt Franklin, chairman of committee, Wirt Franklin Petroleum Corporation, Box 966, Ardmore, Okla.

K. S. Adams, president, Phillips Petroleum Co., Bartlesville, Okla.

J. A. Aylward, Aylward Production Co., 708 Ellis-Singleton Building, Wichita, Kans.

Amos L. Beaty, Gulf Building, Houston, Tex.

J. S. Bridwell, Bridwell Oil Co., 811–815 City National Bank Building, Wichita Falls, Tex.

Al Buchanan, Al Buchanan Drilling Co., 2114 Alamo National Building, San Antonio, Tex.

Frank Buttram, president, Buttram Petroleum Corporation, 2909 First National Bank Building, Oklahoma City, Okla.

J. E. Farrell, president, Farrell & Co., 1718 W. T. Waggoner Building, Fort Worth, Tex.

Judge R. H. Foster, president, Landreth Production Corporation, 1412 Petroleum Building, Fort Worth, Tex.

S. A. Guiberson, Jr., general manager, Guiberson Oil Co., 1000 Forest Avenue, Box 1106, Dallas, Tex.

W. S. Hallanan, president, Plymouth Oil Co., 601 Kanawha National Bank Building, Charleston, W. Va.

Jake Hamon, Cox & Hamon, Magnolia Building, Dallas, Tex.

Capt. B. A. Hardey, Sultana Oil Corporation, 1012 Slattery Building, Box 368, Shreveport, La.

Winston P. Henry, president, Putnam Oil Co., 711 Second National Bank Building, Houston, Tex.

George A. Hill, Jr., president, Houston Oil Co. of Texas, Petroleum Building, Box 2412, Houston, Tex.

J. C. Hunter, Gregg Oil Co., 522 Mims Building, Box 1464, Abilene, Tex.

A. E. Johnson, president, Argo Oil Corporation, 1104 First National Building, Denver, Colo.

C. A. Johnson, president, Holly Development Co., 1004 Rowan Building, Los Angeles, Calif.

Alf. M. Landon, 1008 National Bank of Topeka Building, Topeka, Kans.

C. A. Lester, president, Lester & Duffield, Inc., 1316 Gulf States Building, Dallas, Tex.

Ralph B. Lloyd, president, Lloyd Corporation, Ltd., 5410 Wilshire Boulevard, Los Angeles, Calif.

George N. McCabe, president, Helmac Trust, Cut Bank, Mont.

Joe K. Mahony, MacMillan Petroleum Co., Armstrong Building, El Dorado, Ark.

E. H. Moore, E. H. Moore, Inc., Box 1709, Tulsa, Okla.

E. C. Moriarty, vice president, Derby Oil Co., 358 North Broadway, Box 1114, Wichita, Kans.

L. H. Prichard, president, Anderson-Prichard Oil Corporation, 10th floor—Ramsey Tower, Oklahoma City, Okla.

E. B. Reeser, president, Barnsdall Oil Co., Petroleum Building, Tulsa, Okla.

Carl Schwyn, president, Security Oil Co., East Front Street, Cygnet, Ohio.

A. A. Seeligson, president, Transwestern Oil Co., Box 88, San Antonio, Tex.

E. B. Shawver, Shawver Petroleum Co., 311 Ellis-Singleton Building, Wichita, Kans.

W. G. Skelly, president, Skelly Oil Co., Box 1650, Tulsa, Okla.

C. A. Smith, Jr., Smith Petroleum Co., 203 Bearinger Building, Saginaw, Mich.

P. E. Taggart, Big Four Oil & Gas Co., 117 West Olive Street, Bridgeport, Ill.
Earl D. Wallace, president, Kentucky Oil & Gas Association, Lexington, Ky.
Van S. Welch, Flynn, Welch & Yates, Inc., Artesia, N. Mex.
Ralph T. Zook, president, The Sloan & Zook Co., 101 Main Street, Bradford, Pa.

Mr. COLE. Twelve of the thirty-six, of the Committee of Thirty-six of the Independent Petroleum Association of America are directors of the American Petroleum Institute, are they not?

Mr. BROWN. Quite a good number.

Mr. COLE. And a number of the gentlemen comprising the committee we have been privileged to hear from during these proceedings, such as Mr. Hill, of Houston; Mr. Millikan, of Houston; Mr. Buttram, of Oklahoma City; Mr. Hamon, of Dallas; and Judge Hunter, of Abilene.

Was this report known as Report No. 225?

Mr. BROWN. You mean the Committee of Thirty-six?

Mr. COLE. Yes.

Mr. BROWN. No; it did not have a number. The report of the Committee of Thirty-six had no number. That was just the report of the Committee of Thirty-six. That 225—you are probably referring to some report of mine to the president. Is it addressed to the president?

Mr. COLE. Yes.

Mr. BROWN. That would be a report from my office to the president.

Mr. COLE. As a part of your testimony, will you incorporate that letter of August 12, 1939?

Mr. BROWN. Is that the one, August 12, 1939?

Mr. COLE. Yes; August 12, 1939.

Mr. BROWN. I will be glad to do that. I will furnish you a copy for the record.

(The letter referred to is as follows:)

REPORT NO. 225

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA,
Washington, D. C., August 12, 1939.

To Mr. CHAS. F. ROESER,
President, Independent Petroleum Association of America.

One outstanding disclosure through the current cuts in the price of crude petroleum is the unfortunate position of American industry which permits a few men sitting in New York to disrupt the economic welfare of the 18 oil-producing States thereby weakening or destroying the power of those States to maintain the budgets on which they rely to support schools, social legislation, and governmental functions and in some instances render these States incapable of meeting their financial requirements.

This is too much power over our national life to be lodged in the hands of a few men who can thus nullify the functions of government without even seeing fit to explain why they do it.

Is the present price cut the result of a deliberate program of a few with whom rests this power? The principal danger of unregulated imports is that whenever the importing companies desire to reduce the price they pay the domestic oil industry for its production they can increase the amount of cheap oil they bring in from abroad so that this additional supply would break the price. During the past quarter, a time when everyone recognized we had an abundance of domestic oil, imports have increased to the highest points since 1932. At the same time the principal importing company went into court and has now obtained the right to increase its production in the famous East Texas field to an amount not exceeding 44 percent of the allowable. If other producers in the field follow this example it would be impossible to assimilate this amount of oil. So, whether by design or not, we find in the hands of a few people a power which exceeds the power of the Government ir its effect upon American industrial, financial, and economic life.

The question is not merely one of a price cut but the irresponsible exercise of authority by a few men over the Nation's future.

Very truly yours,

RUSSELL B. BROWN.

Mr. COLE. I do not want to put a letter in the record, Mr. Brown, without your having, of course, the right to comment on any part of it you care to. It may not be necessary to take the time now. But, there is another letter dated January 24, 1939, Report No. 205, addressed to the president of the association, in which letter you discuss the price cut prevailing at that time and 900,000 barrels being sold below the posted price, and this statement follows:

> Are we to be amazed that an increasing number of intelligent men are finding their sympathies unconsciously swinging to some provision for an over-all conservation program that will insure to the entire industry a sane development of its petroleum resources.

And in discussing specifically Illinois, you had this to say:

> Illinois producers in the new field seem scheduled to be punished, just as so many producers in other new fields have been punished in the past. Purchasers of their oil are willing to take it at as low a price as the producer will accept. They will probably continue to do this until the Illinois producer is protected by proper legislation which will stop this looting of the State's oil reserves. Would it not be well if the Illinois producers could get before a legislative committee some bill so that hearings could develop just the sort of law that is required.

That was over a year ago you were referring to Illinois.

Have you any opinion to express now as to what we might expect in that direction?

Mr. BROWN. Mr. Chairman——

Mr. COLE. Looting is still going on, I presume.

Mr. BROWN. I think to a very large extent. Not so much of it is being sold now below the posted price as it was at that time. So they are not being punished as much, but the hope of legislation is one on which I have difficulty of finding any definite peg to hang my guess. But, I will say this, that since that time there has been a progressive understanding and development of understanding among the oil producers themselves in the State of Illinois until today there is very little opposition to a bill, except in one small group; but there seems to be some political difficulties that have gotten in the way of getting the legislative action of the sort and type of bill needed. I think their minds have pretty well met as to the type of bill that should be offered, and I believe there is rather general agreement among those that would pass on the bill, but because of political conditions it has been a little difficult to get action on it.

I cannot guess when. My guess now is that it will probably be after the State primaries there before there will be a call, but that is purely a guess. I have no way of telling. Of course my hope is that it will be earlier, because I think that some of the producers are still being punished and are losing some valuable resources by virtue of it. I do not think there is any question about that.

(The letter of January 24, 1939, is as follows:)

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA,
Washington, D. C., January 24, 1939.

REPORT NO. 205

To Mr. CHAS. F. ROESER,
President, Independent Petroleum Association of America:

Another step in the effort to determine the facts behind the present situation in the petroleum industry was taken when the committee on refining and marketing, a subcommittee of our committee of 36, held conferences with various governmental agencies, including the Federal Trade Commission, the Securities and Exchange Commission, and the Antitrust Division of the Department of Justice. These conferences aided the committee to obtain the necessary background for its study of the problems of the refiner and marketer as a preliminary to an attempt at their solution.

The vote of the committee of 36 that this subcommittee inquire into the question of a survey of the industry to be made by a disinterested and impartial body may yet bring about a scientific and unbiased study of petroleum problems.

I have requested the Federal Trade Commission to inform us whether it would be advisable to approve any part of the Marketing Code on which hearings were held in February 1937 and also whether it would be possible to amend other portions so that they could receive the approval of the Commission.

The attitude of major companies toward any sound conservation program may be determined from their conduct. What is the obvious conduct to which our attention is now directed?

In the Panhandle of Texas, in north Texas, in southern Oklahoma, in the Osage Nation and northeast Oklahoma, in Kansas—to name just a few—there is evidenced a determined program by majors to abandon wells of settled production in favor of the more flush and prolific fields in which they own the greater portion, leaving the producers in these older fields prostrate, to survive if they can. The effect of this action is that these producers, in the period between prostration and death, must find new purchasers who dictate to them the price they will receive for their crude regardless of its value. This crude is reaching the market in the form of refined products that can be sold below a parity with refined products from crude bringing a reasonable price, thus affecting the retail markets for all oil.

Another example is found in the price paid for crude produced in Michigan, which though it amounts to only approximately 50,000 barrels a day, can be marketed in Chicago, in the form of refined products at a realization about 35 cents less than the posted price for crude in the majority of the fields finding this territory as their outlet.

It is variously estimated that between 30,000 and 50,000 barrels of oil are being sold daily by producers at less than the posted price and this is being pointed to as the reason for the break-down. While this fact indicates a bad situation, it is significant when compared with the 800,000 to 900,000 barrels being sold by major companies through their marketing outlets at a realization far below the posted price.

Are we to be amazed that an increasing number of intelligent men are finding their sympathies unconsciously swinging to some provision for an over-all conservation program that will ensure to the entire industry a sane development of its petroleum resources?

Are we exercising intelligently that industrial freedom for which we cry so loudly?

The constructive attitude of the committee of 36 as evidenced by their action indicates a faith that when the problems of the industry are clearly set forth, they would be corrected by those on whom that responsibility rests. Events since the last meeting of this committee are not justifying that faith. It now appears but natural that those in whom this faith was placed must act to justify that faith or else those who placed that faith must withdraw it.

The next step taken by the committee of 36 should be interesting.

MOVE FOR NEW CONSERVATION LAWS

The movement in many States for the adoption of new conservation laws or the revision of existing statutes is important. Lack of proper legislation is intensifying the problems of the industry.

In Michigan, the producers are being cheated out of much of the value of their oil. Buyers are taking advantage of the helplessness of the producers and are paying 35 cents below the parity price. Products of this oil are being dumped in the Chicago market area, to the damage of the producer and refiner of oils from other fields.

Illinois producers in the new field seem scheduled to be punished, just as so many producers in other new fields have been punished in the past. Purchasers of their oil are willing to take it at as low a price as the producer will accept. They will probably continue to do this until the Illinois producer is protected by proper legislation which will stop this looting of the State's oil reserves. Would it not be well if the Illinois producers could get before a legislative committee some bill so that hearings could develop just the sort of law that is required.

It is encouraging to note that the Arkansas Legislature is considering a sound conservation law which should aid in remedying the situation in that State.

Louisiana indicated at one time, by a reduction in its excess production, that it knew what to do. Whether it will do what it should is another question.

The attitude of California producers evidences a determination to do their part in correcting the production situation.

MARKETING SITUATION

The purchaser cuts the price of crude so he can cut the price of gasoline so he can cut the price of crude so he——

Our brief glimpse into the marketing end of the industry promises entertainment. Imagine a man who could not borrow $100 from the bank, is importuned to enter the business. He is loaned a palatial station, furnished expensive equipment, and clothed with the authority and responsibility of a full-fledged marketer in a great industry and then (what is really funny) this man determines the price at which this industry will dispose of its products.

CONNALLY REWRITING HOT OIL LAW

Senator Tom Connally, of Texzs, has stated that he is planning to introduce a bill to make the "hot-oil" law permanent legislation with an added provision concerning prosecution for offenses committed against the law during any of the periods of its repeated continuance. This is inspired by the recent case in Texas where a judge held that prosecutions for violation of the original law could not be made under the current statute.

TO ALLOW STATES TO ENTER UNIT PLANS

Congressman John Dempsey, of New Mexico, has presented H. R. 2953, authorizing States owning lands acquired from the United States to include such lands in any agreement to conserve the oil and gas resources in such State, subject to the approval of the Secretary of the Interior. The bill specifically states that such agreements may provide for cooperative or unit operation of any oil or gas pool or field.

A THOUGHT ON ASPHALT

While motoring through the United States during the past several months, I have made it a point to ask filling-station employees how the road ahead was. I, too, often get the answer, "Fine, you have a concrete road all the way," or, "Fine, all concrete except one short piece." Thus, oil company employees who are potential advertisers for oil were unconsciously advertising concrete.

One refiner complaining of his lack of sales of asphalt was the principal individual taxpayer in his county. I asked him how far his refinery was from a concrete road. He answered, "About 100 yards." A county dependent on oil was using concrete for road purposes. A county producing the best and cheapest road material was using a more costly and inferior material.

Very truly yours,

Russell B. Brown.

(The recommendations to the Interstate Oil Compact Commission Governors of the oil-producing States, and State regulatory bodies above referred to are as follows:)

Resolution of Kentucky Oil and Gas Association

At a meeting of the Kentucky Oil and Gas Association held in Louisville, Ky., on February 22, 1940, at which there were present more than 70 members and others interested in the oil industry, the following resolution was unanimously adopted, viz:

"Whereas there is pending in the Congress of the United States House bill 7372, known as the Cole bill, by which it is proposed to vest in a Bureau of the Federal Government full control of the production and transportation activities of the oil industry and which would have the effect, in our opinion, of duplicating many existing State regulatory agencies, creating conflicts of authority and jurisdiction, with doubtful effect in aiding the cause of conservation, and greatly impairing the efficiency of the petroleum industry; and

"Whereas most of the important oil-producing States of the Union have entered into a compact for the conservation of oil, and have already adopted conservation laws which are, in the main, effectively preventing any undue waste of the oil resources of the country; and

"Whereas while the oil production of the State of Kentucky is small as compared with that of many States, and it is believed that there is, at this time, no waste of the oil resources in this State nor any practices in the industry which would render it desirable to put the control of the industry under a Federal agency; now, therefore, be it

"*Resolved*, That in the opinion of this association the passage of said Cole bill by the Congress of the United States is not required in the interest of either the Nation, the consuming public, or the industry, and it, therefore, requests Congress not to pass such bill."

Attest:

E. L. McDONALD, *Secretary*.

RESOLUTION OF NATURAL GASOLINE ASSOCIATION OF AMERICA, FEBRUARY 9, 1940

Whereas the Natural Gasoline Association of America believes that the governing bodies of the various oil-producing States have proven their ability to conceive and enforce sound conservation measures leading to the elimination of waste and destructive production practices; and

Whereas the Natural Gasoline Association of America is of the opinion that it is to the best interests of the people of this country that such regulatory powers remain in the hands of the established agencies of the sovereign States in conformance with the fundamental principles of the American form of government; and

Whereas this Board sees in House bill 7372 a violation of these principles through the transfer of the inherent rights of States to Federal bureaus, and a restriction of the American system of free enterprise; now, therefore, be it

Resolved, That the Board of Directors of the Natural Gasoline Association of America go on record, and it hereby does, as opposed to House bill 7372, or any legislation having Federal regulation of the petroleum industry as its object, and recommends to the Congress of the United States that it refuse to enact House bill 7372 or any similar legislation.

RESOLUTION REGARDING COLE BILL BY THE NATIONAL ASSOCIATION OF PETROLEUM INVESTORS

Whereas House bill H. R. 7372 commonly referred to as the Cole bill has been promoted to be enacted by the Congress of the United States to provide measures and regulations whereby the Federal Government would assume control of the petroleum industry, and

Whereas no necessity or emergency exists in or by or throughout the petroleum industry causing requirement for Federal management, and

Whereas the excited claims of general avoidable and uncontrolled waste of natural petroleum resources are without fact (except in Illinois) and apparently merely based on the fancy and are the creation of propagandists fanning fires of distortion for the purpose of perpetuating their own personal employment and powers by establishing an additional political Federal bureau, and

Whereas in most States in which petroleum is produced there is to be found satisfactory, orderly, economical, safe and careful operations in the main, under competent ownership also according to appropriate regulations and supervision by duly organized and experienced conservation departments, and

Whereas there is no Federal bureau possessing competent, trained and experienced personnel to which this stupenduous responsibility can be entrusted without creating an incomprehensible hazard to the security and current livelihood activities of most of the citizens and industries of this country with catastrophic effects, and

Whereas the said bill is a deliberate attempt to take over a great industry, to take away State's rights and to supersede State authority, and

Whereas the bureau head proposed could control the oil industry from the staking of every well to its final abandonment, and

Whereas the oil reserves have increased constantly. Existing known reserves are the greatest in history today. Shale deposits will yield more than 92,000,000,000 barrels of oil. This is five times the present known crude reserves, and

Whereas we should not allow the desire of bureaucrats to gain control of the industry, exercise a longing grasp for more power and import foreign oils to prevent the present use of this resource in an industry which is at least fourth in importance among all the activities of our Nation.

It is therefore resolved that to properly defend the interests of the approximately 2,000,000 investors and owners (stockholders, bondholders, royalty owners, etc). of the oil business in this country this association emphatically and utterly condemns the said Cole bill and maintains it is a serious menace to free American enterprise; that it will create more unemployment, force enormous losses to investors, and demoralize one of our most vitally necessary industries and all the countless related businesses and furthermore the Cole bill must be defeated thoroughly and completely.

I hereby certify that the above and foregoing is a true and correct copy of a resolution adopted at the regular meeting of the members of the National Association of Petroleum Investors, formerly the Mid-Continent Royalty Owners Association, held in the city of Tulsa, Okla., on the 9th day of January 1940.

M. E. Ellinghausen,
Assistant Secretary.

Resolution of Oklahoma Stripper Well Association, Tulsa, Okla.

At the annual membership meeting of the Oklahoma Stripper Well Association, held in Tulsa, Friday, December 1, A. D. 1939, careful consideration was given to a bill, introduced in the Congress of the United States by Congressman Cole of Maryland, at the request of the President of the United States of America; and

Whereas the proposed bill, introduced in the Congress by Congressman Cole, for Federal control of the oil industry, would tend further to centralize government and remove the control of production and conservation of oil from local State officials to Federal officials; and

Whereas said bill does not provide for ratable taking of oil and provides no assurance of an adequate market to both the weak and the strong producers; and

Whereas said bill does not carry any provision, looking to the continued production and preservation of stripper wells; and

Whereas said bill, if enacted, will likely result in increased importation of oil and the withholding of production from the present producing fields; and

Whereas we agree and approve of the policies of Gov. Leon C. Phillips of Oklahoma, that have been widely and publicly approved, from his addresses before the people of the Nation; therefore be it

Resolved, That the members of the Oklahoma Stripper Well Association, at their annual membership meeting, protest the enactment of the Cole bill (H. R. 7372), or any other bill that places the development and production of oil under the arbitrary control of any Federal bureau.

Unanimously adopted, December 1, 1939.

Oklahoma Stripper Well Association,
W. A. Goforth, *President.*
Howard J. Whitehill, *Secretary and Treasurer.*

Resolution of Fourth District Stripper Well Association, Okmulgee, Okla., February 17, 1940

At a special meeeting called by its president on February 16, 1940, the Fourth District Stripper Well Association of Oklahoma, after careful consideration was given to a bill introduced into Congress by Congressman Cole, known as the Cole bill, H. R. 7372, by a unanimous vote the directors of this organization oppose said Cole bill and any other bill which would in any way govern or control or interfere with States' rights.

We therefore appoint the Independent Petroleum Association of America to represent us in opposition to said Cole bill.

Fourth District Stripper Well Association,
John H. Rebold, *President.*

A Resolution of the West-Central Texas Oil and Gas Association

Whereas the officers of the West-Central Texas Oil and Gas Association, together with the seventy directors of the organization, have given careful study to the provisions of House bill No. 7372 (the Cole bill), which is now before the Federal Congress for consideration, and

Whereas this study has not shown that the provisions of House bill No. 7372 (the Cole bill) would provide any new relief from or for any of the problems and difficulties which now affect the oil industry in general, and particularly the independent oil operators and producers, and

Whereas it appears that House bill No. 7372 (the Cole bill), if enacted into law, would only set up a duplication of regulations and services already available through Texas and various other oil producing States; therefore be it

Resolved, That the West-Central Texas Oil and Gas Association, this 15th day of February, 1940, go on record as opposing House bill No. 7372 (the Cole bill), and be it further

Resolved, That we authorize the president and secretary of this association to express the feeling and sentiment of this organization and its 2,700 members, with regard to House bill No. 7372 (the Cole bill) in whatever manner they may think best.

Approved by the board of directors of the West-Central Texas Oil and Gas Association by written ballot.

Joe A. Clarke, *President, Albany, Tex.*

Attest:

J. C. Watson,
Executive Secretary, Abilene, Tex.

February 15, 1940.

New Mexico Oil and Gas Association,
Roswell, N. Mex., February 15, 1940.

Mr. Russell B. Brown,
Independent Petroleum Association of America,
942 Investment Building, Washington, D. C.

Dear Mr. Brown: The following is a copy of a resolution adopted at our annual meeting held December 4, 1939, relative to H. R. 7372 introduced by Congressman William P. Cole:

"RESOLUTION

"Whereas New Mexico is an active member of the Interstate Oil Compact Commission and has been active in the regulation of crude oil production for the elimination of waste, and;

"Whereas it is necessary and important to the development of this program of State regulation that any interference or regulation by the Federal Government be discouraged; now, therefore, the New Mexico Oil and Gas Association at its annual meeting on December 4, 1939, does hereby

"*Resolve*, That it is opposed to any Federal interference or regulation, and is, therefore, opposed to the pending bill introduced by Congressman William P. Cole (H. R. 7372); it is further

"*Resolved*, That a copy of this resolution be transmitted to Hon. John E. Miles, Governor of New Mexico, each of the New Mexico congressional delegation, and the chairman of the Interstate Oil Compact Commission."

This letter is your authority to represent the New Mexico Oil and Gas Association at the hearing now being held before the Cole Committee.

Thanking you for your cooperation in the matter, we are

Yours very truly

New Mexico Oil and Gas Association,
By C. J. Dexter, *President.*

Resolution of the North Texas Oil and Gas Association

Whereas the State of Texas has on her statute books adequate laws, both civil and criminal, to enforce the conservation of oil and gas in the production thereof in Texas, and

Whereas, more important than the existence of adequate laws, the operators in Texas have learned the benefits to them of true conservation and obedience to such conservation laws evidenced by the universal approval in the industry of obedience thereto, and

Whereas, for some time any failure in Texas to observe true conservation is brought about through errors in the administration of conservation laws and not to any defect in such laws, and

Whereas, errors in administration are but human errors and might occur in any human administration, either State or Federal, and

Whereas, the petroleum industry is likewise suffering from the failure on the part of certain States to enact and enforce conservation laws, which failure on the part of such States can be corrected by the continued effort within the industry itself to bring about the enactment and enforcement of such laws in such States, and

Whereas, the provisions of H. R. 7372 are unnecessary to the correction of the ills of the petroleum industry and in many respects such provisions are in violation of our conception of fundamental democratic government; therefore be it

Resolved, by the board of directors of the North Texas Oil and Gas Association at its regular monthly meeting in Wichita Falls, Tex., on this the 5th day of February 1940, that we oppose H. R. 7372 as being an unnecessary and improper approach to the ills from which our industry is suffering; be it further

Resolved, That we authorize Mr. Russell Brown of Washington, D. C., to represent this association at the hearing in Washington before the committee considering H. R. 7372 and that the said Russell Brown be and he is hereby authorized to present for us our opposition to such enactment and that he be authorized to present a copy of this resolution and in our behalf request said committee to refrain from recommending the passage of such bill.

I, John F. O'Donohoe, president, and I, D. G. Gray, executive vice president and secretary of the North Texas Oil and Gas Association, do hereby certify that the above is a true copy of the resolution passed by the board of directors of the North Texas Oil and Gas Association at its regular monthly meeting on February 5, 1940.

To certify which, witness our respective official signatures.

JOHN F. O'DONOHOE,
President.
D. G. GRAY,
Secretary.

Sworn to and subscribed before me by John F. O'Donohoe and D. G. Gray, known to me to be respectively president and executive vice president and secretary of the North Texas Oil & Gas Association.

D. H. RULZAM,
Notary Public, Wichita County, Tex.

RESOLUTION OF THE ILLINOIS-INDIANA PETROLEUM ASSOCIATION

Be it Resolved, That we, the board of directors of Illinois-Indiana Petroleum Association in meeting regularly called and held at Robinson, Ill., on the 18th day of January 1940, having considered the bill generally known as Petroleum Conservation Act of 1939 (H. R. 7372), which was introduced in the House of Representatives of the Congress of the United States on July 26, 1939, by Mr. Cole of Maryland, do hereby declare that we are unalterably opposed to the enactment of said bill upon the grounds and for the reasons, among others:

1. The concentration of power at Washington, D. C., to control the production and transportation of petroleum throughout the United States, in an individual to be appointed by the President and designated the Commissioner, but to be clothed with dictatorial power as set forth in H. R. 7372, is not now justified by the conditions and practices generally prevailing in the petroleum producing States, and we believe that at any time and under any circumstances the subordination of the sovereign powers of the States over their petroleum industries to Federal authority such as proposed by the terms of said H. R. 7372 would be subversive of our constitutional form of government;

2. The practices and methods pertaining to petroleum prospecting, production, and conservation of deposits generally approved and now prevailing throughout the country have been devised and adopted by men possessing the practical experience necessary to qualify them as leaders and teachers concerning such matters. Progress in the discovery of new principles and improvement of mechanical appliances and operating practices has been rapid and gratifying under our long established competitive system, especially during the last few years, and may reasonably be expected to continue if not balked or disturbed by the inauguration of a system entirely alien to our general governmental system and

under which the public could have no assurance that individual enterprise, initiative, and experiment might remain active or even be permitted to survive; and, be it further hereby

Resolved, That the secretary of this board is hereby directed to mail copies hereof, to, etc.

Attest:

LEE MULVIHILL,
Executive Secretary.

RESOLUTION OF THE KANSAS INDEPENDENT OIL AND GAS ASSOCIATION

Whereas the attention of the American petroleum industry has been directed to the hearings now being held by the Cole committee on H. R. 7372; and

Whereas the independent oil producers of Kansas feel their interests as well as the interests of the oil consuming public will be menaced by the passage of H. R. 7372; therefore be it

Resolved by the Kansas Independent Oil and Gas Association, That the enactment of H. R. 7372, the so-called Cole bill, will destroy the inherent rights of the State of Kansas to exercise its police power to conserve its natural resources; that the passage of the present conservation law in Kansas as well as those now existing in various other Midcontinent States should be demonstration enough of the desire of those States to produce oil and gas without waste; that the passage of H. R. 7372 would be a duplication of existing regulations and an unwarranted burden upon the independent oil producers already in serious dilemmas from too many restrictive, taxation, and regulatory laws; be it further

Resolved, That if Federal control is imposed upon the oil industry the independent oil producer and the stripper-well owner who produce more than 70 percent of the oil wells of the Nation will be doomed. Red tape, long-range authority, and changing governmental policies which he can neither control nor influence will cause his destruction much to the disadvantage of the consuming public; be it further

Resolved, That the Kansas Independent Oil and Gas Association express the lack of faith in any possible benefits to the State of Kansas to be derived from the passage of this bill.

Adopted by the board of directors of the Kansas Independent Oil and Gas Association, February 16, 1940.

WM. L. AINSWORTH, *President.*

COPY OF RESOLUTION OPPOSING COLE BILL (H. R. 7372) BY OHIO PETROLEUM MARKETERS ASSOCIATION, INC., COLUMBUS, OHIO

Whereas there has been introduced and is now pending in Congress a measure commonly known as the Cole bill (H. R. 7372) proposing to create a Federal Office of Petroleum Conservation under the Department of the Interior with authority by statute and related regulations to exercise control over the production of crude oil in the various States; and

Whereas the production of crude oil is already subject to control by appropriate legislation enacted in all but two of the principal oil-producing States and such control or regulation appears to have been efficiently exercised by the various regulatory bodies of such States; and

Whereas legislation of similar character and intent is contemplated in other States in which substantial amounts of crude oil are produced; and

Whereas in the various States having such legislation control of production has been so exercised as to protect properly natural resource energy and at the same time to maintain reasonable parity with the current requirements of consumption; and

Whereas the petroleum industry has always successfully operated as a free enterprise and by individual initiative and private endeavor has from time to time located new reserves and developed additional sources of supply of crude oil, has produced constantly improved motor fuels, lubricants and other petroleum products and has supplied those products at reasonable prices while employing labor at liberal wages; and

Whereas Federal regulation and control of production of petroleum will constitute an unwarranted invasion of the field of private enterprise, will create conflict of authority and will indirectly affect refining and marketing operations and thus result in bureaucratic control of the oil industry, which is both unnecessary and contrary to the spirit of American institutions: Now, therefore be it

Resolved, That the board of directors of the Ohio Petroleum Marketers Association, Inc., an organization composed of jobbers of petroleum products operating in the State of Ohio, does hereby oppose the enactment of the so-called Cole bill as both unnecessary and unwarranted; and be it further

Resolved, That the secretary of said association be and he is hereby directed to forward a copy of this resolution to the chairman of the committee now conducting hearings upon said bill with the request that said resolution be included in the record of such hearings and that he be further directed to forward a copy of such resolution to both Senators and to all Representatives from the State of Ohio in the national Congress.

The foregoing is a true and exact copy of a resolution which was adopted by the board of directors of the Ohio Petroleum Marketers Association, Inc., at a meeting duly called and conducted on December 21, 1939.

ROBERT A. WARFEL,
Executive Secretary.

RESOLUTION OF THE KANSAS INDEPENDENT OIL AND GAS ASSOCIATION

Whereas the attention of the American petroleum industry has been directed to the hearings now being held by the Cole committee on H. R. 7372; and

Whereas the independent oil producers of Kansas feel their interests as well as the interests of the oil consuming public will be menaced by the passage of H. R. 7372: Therefore be it

Resolved by the Kansas Independent Oil and Gas Association, That the enactment of H. R. 7372, the so-called Cole bill, will destroy the inherent rights of the State of Kansas to exercise its police power to conserve its natural resources; that the passage of the present conservation law in Kansas as well as those now existing in various other Midcontinent States should be demonstration enough of the desire of those States to produce oil and gas without waste; that the passage of H. R. 7372 would be a duplication of existing regulations and an unwarranted burden upon the independent oil producers already in serious dilemmas from too many restrictive, taxation, and regulatory laws; be it further

Resolved, That if Federal control is imposed upon the oil industry the independent oil producer and the stripper-well owner who produce more than 70 percent of the oil wells of the Nation will be doomed. Red tape, long range authority, and changing governmental policies which he can neither control nor influence will cause his destruction much to the disadvantage of the consuming public; be it further

Resolved, That the Kansas Independent Oil and Gas Association express the lack of faith in any possible benefits to the State of Kansas to be derived from the passage of this bill.

Adopted by the board of directors of the Kansas Independent Oil and Gas Association, February 16, 1940.

[SEAL]

WM. L. AINSWORTH,
President.

RESOLUTION PASSED BY THE BOARD OF DIRECTORS OF THE BRADFORD DISTRICT PENNSYLVANIA OIL PRODUCERS ASSOCIATION, BRADFORD, PA., ON FEBRUARY 2, 1940

Resolved, That our association be recorded as opposed to the enactment of H. R. 7372, known as the Petroleum Conservation Act of 1939.

BRADFORD DISTRICT PENNSYLVANIA
OIL PRODUCERS ASSOCIATION.
J. S. MARTIN, *Executive Secretary.*

RESOLUTION OF THE INDEPENDENT OIL PRODUCERS ASSOCIATION OF ILLINOIS

Whereas H. R. 7372 for the establishment of Federal control and supervision of the petroleum industry of the United States, generally known as the Cole bill, is now before the subcommittee of the House Committee on Interstate and Foreign Commerce for hearings and consideration; and

Whereas the officers and directors of the Independent Oil Producers Association of Illinois have given full consideration to the wording and the purport of this bill for the creation and maintenance of a Federal Department of Petroleum Conservation, giving to said Department and its director what we feel would be arbitrary and dictatorial powers over the petroleum industry which are unwarranted in the light of the adequate laws and regulations now in force and effect in most of the oil-producing States; and

Whereas a program for similar conservation regulations is now under way in Illinois, sponsored by this association and supported by the owners of more than 80 percent of the State's petroleum production, and with reasonable assurance of early enactment which would bring practically all petroleum production in the Nation under the supervision of the oil States compact commission: Therefore be it

Resolved, That we oppose any attempt to bring the petroleum industry of this country under any further degree of Federal control and administration than at present exists; and that we feel that the terms of the proposed Cole bill are inimical to the best interests of the oil-producing States, the producers and their royalty owners, and the consumers of the Nation; and we therefore voice our unequivocable opposition to the enactment of H. R. 7372—the Cole bill—and delegate to the Independent Petroleum Association of America and its proper representatives the authority to represent this association in the hearings before the Cole subcommittee and the Congress, and that the original of this resolution be forwarded to Representative William P. Cole, Jr., chairman of the subcommittee of the House Committee on Interstate and Foreign Commerce, and copies forwarded to all members of the Illinois congressional delegation.

Signed this 17th day of February A. D. 1940 at Centralia, Ill.

JOHN PUGH, *President.*

Attest:

C. J. HAAS, *Secretary-Treasurer.*

RESOLUTION OF THE AMERICAN PETROLEUM INSTITUTE

Whereas the American Petroleum Institute is fully aware of the great importance to the Nation of the petroleum resources of this country; and

Whereas the American Petroleum Institute earnestly believes that the American system of free enterprise is indispensable to the continuance in this country of the American form of government; and

Whereas the American petroleum industry in the past, without the payment to it of subsidies of any kind, has met all demands made upon it in times of war, as well as peace, and in recent years has developed vast underground reserves which will enable the industry to meet all demands that may be made upon it for many years in the future, either in emergencies or peacetimes; and the industry in meeting the demands made upon it has increased the supply of gasoline from 8,000,000 barrels in 1900 to approximately 550,000,000 barrels in 1938, and we believe that such an achievement could not have been accomplished by any other system; and

Whereas the petroleum industry in the past decade has made tremendous strides in improving its methods of production, refining, transportation, and marketing, and has constantly diminished the amount of preventable waste; and is delivering to consumers quality products at very reasonable prices, is generous in the treatment of its employees, is paying enormous taxes to the State and Federal Governments, and is returning only a modest amount of earnings to its security holders; and

Whereas the petroleum industry believes that it is in the best interests of the Nation, the States, and the citizens of this country, and in consonance with the American system of government, that the oil resources of this country should be developed under the supervision and control of the several sovereign States, and not under control of Federal agencies, thus enabling the State conservation authorities in the various oil-producing States to continue their present constructive conservation activities without Federal interference; and

Whereas all of the important producing oil States in this country with two exceptions have already adopted conservation laws, and efforts are now being made by representatives of the industry in these two States to enact conservation laws in said States; and

Whereas it is the opinion of this board that House bill 7372 would result in transferring to a subordinate bureau of the Department of the Interior of the

Federal Government control in the minutest degree of the production and transportation activities of the industry; and would also indirectly affect the refining and marketing activities of the industry, thus duplicating many existing State regulatory agencies, and creating conflicts of authority and jurisdiction, and in obstructing rather than aiding the cause of conservation; and furthermore would greatly interfere with, if not destroy, the petroleum industry as an integral part of the American system of free enterprise: Now, therefore, be it

Resolved, That the board of directors of the American Petroleum Institute make this formal declaration of its opinion that the passage of House bill 7372, or legislation of a similar purport, would not be in the best interest of either the Nation, the States, the consuming public, or the industry; and that this board should, and does, recommend to the Congress of the United States that it refuse to enact into law House bill 7372 or any similar bill; be it further

Resolved, That the board of directors of the American Petroleum Institute make this further formal declaration; that it favors the enactment of conservation laws in all of the important oil-producing States in this country.

Resolution of Oil and Gas Association of Michigan

At a meeting of the Oil and Gas Association of Michigan held in the city of Grand Rapids on Tuesday, November 28, 1939, the following resolution was unanimously adopted:

Whereas there is pending in the Congress of the United States of America, a bill known as House bill No. 7372, and commonly known as the Cole bill, and which bill proposes to transfer to a subordinate bureau of the Department of the Interior of the Federal Government, control of the production and transportation of crude oil, and indirectly thereby also affecting the refining and marketing activities of the industry, thus duplicating the supervision and regulation now vested by law in the conservation department of the State of Michigan, and would result thereby in obstructing rather than aiding the cause of conservation with the ultimate possibility that such proposed legislation would destroy the petroleum industry as an effectual and intricate part of the American system of free enterprise; therefore, be it

Resolved, That the Oil and Gas Association of Michigan make this formal declaration that it is the unanimous opinion of the Association that the passage of House bill No. 7372, commonly known as the Cole bill, or any legislation of similar character or purport, would be injurious to the best interest or interests of the Nation, the State, the public, and particularly the oil industry in the State of Michigan, and said association does therefore recommend to the Congress of the United States that they refuse to enact into law House bill No. 7372, commonly known as the Cole bill, or any bill of similar purport; and be it further

Resolved, That the secretary of this association forward copy or copies of this resolution to any committee or subcommittee of the Congress of the United States interested in this legislation, and to each and every member of Congress representing the State of Michigan therein, and to any other Member of Congress whom said Secretary believes it expedient to do so.

Certified to this 7th day of December A. D. 1939.

Oil and Gas Association of Michigan.
A. J. Weideman,
Executive Secretary.

Resolution of Oil Conservation Board of the State of Montana, Great Falls, Mont.

Be it Resolved, That we, the members of the Oil Conservation Board of the State of Montana, duly appointed by the Honorable Roy E. Ayers, Governor of the State of Montana, in meeting regularly called and held at Cut Bank, Mont., on the 30th day of October A. D. 1939, having considered the bill generally known and referred to as the Petroleum Conservation Act of 1939 (H. R. 7372), which was introduced in the House of Representatives of the Congress of the United States on July 26, 1939, by Mr. Cole of Maryland, do hereby declare that we are unalterably opposed to the enactment of said bill upon the grounds and for the reasons, to wit:

1. The concentration of power at Washington, D. C., to control and manage the production, storage, and transportation of petroleum throughout the United States, in an individual to be appointed by the President and designated the Commissioner, but to be clothed with complete dictatorial power as set forth in H. R. 7372, is not now justified by the conditions and practices generally prevailing in the petroleum-producing States, and we believe that at any time and under any circumstances the subordination of the sovereign powers of the States over their petroleum industries to Federal authority such as proposed by the terms of said H. R. 7372 would be a hazardous experiment in Government, more likely to weaken than to strengthen the Nation by reason of destruction of long-established and efficient local control measures and agencies, the substitution of remote authority and new methods of uncertain value, additional enforcement officials, increased taxes, conflicting and confusing regulations, and additional burdens generally that many operators and consumers could not endure.

2. The allegations contained in said H. R. 7372 under the heading "Findings and Declaration of Policy" (sec. 2 (a)), are not substantially true and correct as to a large majority of the petroleum-producing regions of the United States, and, on the contrary, there is no doubt that preventable physical waste of petroleum has been reduced to the minimum consistent with present engineering knowledge and perfection of mechanical appliances except in a comparatively few isolated cases involving newly discovered pools where abnormal conditions prevailing are in process of adjustment and will, undoubtedly, be soon corrected without the intervention of the Federal Government.

3. The Nation is not faced with any emergency in connection with the preservation of its petroleum resources whereby its national defense, is, or will be, imperiled, and if it were we contend that there is no reason for assuming or expecting that the system of Federal-dictator control proposed in H. R. 7372 would remove the danger or solve the problems of the petroleum producers. In the public-land States where the Secretary of the Interior has enjoyed and exercised unrestricted regulatory powers over petroleum prospecting and producing operations on great areas of public lands for nearly 20 years past, such operations being entirely exempt from control by State authorities, the practices pertaining to well drilling, producing, and avoidance of waste prescribed by the Secretary for operators and operations on the lands under his jurisdiction are generally identical with the practices prescribed by State laws and regulations for operators and operations subject to State authority. If the practices may be improved by ways and means known to the Secretary he need do nothing more than point the way to receive the cooperation and support of the operators and State authorities.

4. The practices and methods pertaining to petroleum prospecting, production, and conservation of deposits generally approved and now prevailing throughout the country have been devised and adopted by men possessing the practical experience necessary to qualify them as leaders and teachers concerning such matters. Such men are scarce, they may be expected to resent arbitrary control from any source, and it is not likely that their services would be available to the Federal dictator to be created. Progress in the discovery of new principles and improvement of mechanical appliances and operating practices has been rapid and gratifying under our long-established competitive system, especially during the last few years, and may reasonably be expected to continue if not balked or disturbed by the inauguration of a dictatorship system entirely alien to our general governmental system and under which the public could have no assurance that individual enterprise, initiative, and experiment might remain active or even be permitted to survive.

5. The administrative, punitive, and jurisdictional sections of the bill, comprising nearly half of the 6,000 words it contains, are in general so violative of long-standing laws and judicial procedure intended to protect individuals against official tyranny and errors that it is difficult to see how the representatives of freedom-loving people could seriously consider approving them. Perhaps some of the most repugnant clauses were inserted with the view of being "traded out" by supporters of the bill in the course of the expected and assured legislative battle, and if so, we hope and recommend that our lawmakers may not be deceived by such tactics and will promptly move to give this bill the defeat that it deserves; and, be it further hereby

Resolved, That the secretary of this board is hereby directed to mail copies hereof to the President of the United States; the Senators and Congressmen representing the State of Montana at Washington, D. C.; the chairman of the House Committee on Interstate and Commerce, who will preside over the public hearings on H. R. 7372; the Governor of Montana; all other Federal and State officials who might be interested; representatives of the press; trade associations; and each and every oil producer, transporter, refiner, and storer operating in the State of Montana.

CERTIFICATE

I hereby certify that this sheet and the foregoing sheets, numbered "1" and "2," attached hereto, contain a full, true, and correct copy of resolutions adopted by the Oil Conservation Board of the State of Montana.

In witness whereof, I have hereunto set my hand and the official seal of said board on this 30th day of November A. D. 1939, at my office in Great Falls, Mont.

[OFFICIAL SEAL]

R. P. JACKSON,
Secretary of the Oil Conservation Board of the State of Montana.

RESOLUTION REGARDING PROPOSED COLE FEDERAL OIL CONTROL BILL

Whereas the San Joaquin Valley Oil Producers Association believes that in order to maintain the present form of government and world leadership of the United States it is necessary to continue its system of free initiative and enterprise; and

Whereas the American petroleum industry has grown to be the second largest industry in the United States without any form of governmental help, financial or otherwise; and

Whereas the American petroleum industry within the past decade has become united in the belief that conservation methods and plans are of paramount importance not only to the industry and the individual producer but to the country as a whole, and following this belief has eliminated as is humanly possible all wasteful methods of producing petroleum and gas; and

Whereas we believe that the great strides made in research and improvement of technique in producing, transporting, refining, and marketing of petroleum and gas would not have been possible under an un-American system of Federal control of our industry which would stifle and discourage individual enterprise and initiative; and

Whereas without Government subsidy or regulation the oil industry has reduced steadily from 1926 the cost to the consumer of its constantly improving products to a greater extent than any other commodity; and

Whereas a bill has been introduced in the United States House of Representatives, numbered 7372, which would place under a new Federal bureau absolute control to the smallest detail of the bisuness of every petroleum and gaiproducer in the United States: Now, therefore, be it

Resolved, That the San Joaquin Valley Oil Producers Association declares its opposition to the enactment by Congress of House bill No. 7372 and that such opposition be made known to the Members of Congress who are urged to vote against this bill.

A RESOLUTION OF THE BOARD OF DIRECTORS OF OIL PRODUCERS AGENCY OF CALIFORNIA, A TRADE ASSOCIATION COMPOSED OF 300 OIL PRODUCERS RECORDING OPPOSITION TO H. R. 7372, FEBRUARY 16, 1940

Whereas a bill for the ostensible purpose of aiding in conservation of petroleum reserves of the Nation has been introduced into the Congress and numbered H. R. 7372; and

Whereas such conservation of petroleum reserves is said to be necessary for national defense purposes; and

Whereas scrutiny of said H. R. 7372 shows that its provisions would fail to further conservation of petroleum reserves, but would merely centralize control of the American petroleum industry in a Federal bureau of Washington, and

Whereas the national defense is best served by healthy, capable, and unfettered private industry; and

Whereas various conservation bodies in the several oil producing States, including the voluntary system in effect in California, effectively prevent waste of petroleum reserves, therefore be it

Resolved by the Board of Directors of Oil Producers Agency of California, That this association of independent oil producers hereby reaffirms its opposition to Federal control of the oil industry by recording its opposition to the proposed enactment of H. R. 7372, and be it

Further resolved, That the officers of this organization are hereby instructed to do everything within their power to make known to Congress and its representative committees the true state of affairs in the California oil industry and views of the oil producers of California.

The undersigned secretary of Oil Producers Agency of California hereby certifies that the above resolution was adopted by the Board of Directors of Oil Producers Agency of California at its regular meeting held in the city of Los Angeles on the 9th day of August 1939 and that said resolution is still in force and has not been set aside.

[SEAL] W. A. RUSSELL, *Secretary*.

PAMPA, TEX., *February 20, 1940*.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA,
Investment Building, Washington, D. C.

Request you represent us in opposition to H. R. 7372 in hearings before Cole Committee. Consider this your authority to do so.

PANHANDLE PRODUCERS & ROYALTY OWNERS ASSOCIATION.
By LYNN BOYD, *President*.

TULSA, OKLA., *February 19, 1940*.

INDEPENDENT PETROLEUM ASSOCIATION,
Washington, D. C.

GENTLEMEN: Inasmuch as we will not be able to have a personal representation at the hearing in Washington in opposition to H. R. 7372, we are therefore asking your association to voice our opposition to this measure.

Very truly,

CREEK COUNTY STRIPPER WELL ASSOCIATION.
By ELI WILKONSON, *President*.

OHIO PENNA GRADE OIL PRODUCERS' ASSOCIATION,
New Straitsville, Ohio, February 12, 1940.

MR. RUSSELL B. BROWN,
Independent Petroleum Association of America,
Washington, D. C.

DEAR MR. BROWN: Inasmuch as this association does not wish to present witnesses before the Cole Committee in opposition to H. R. 7372, we respectfully ask that you represent our organization at the proceedings now underway on this matter. Your are hereby authorized to speak in our behalf against the administration's attempt to grab bureaucratic control of the petroleum industry by means of H. R. 7372.

With our grateful thanks for the splendid fight you and your association are making in behalf of the independents in the industry, and with best wishes for your continued success,

I am,

Yours very truly,

PHILIP N. FAINE,
Secretary-Treasurer.

ARDMORE, OKLA., *January 16, 1940*.

RUSSELL B. BROWN, *General Counsel*,
Independent Petroleum Association of America.

It is the desire of our association that you represent us at the hearing before the Ways and Means Committee of the House of Representatives now holding hearings in connection with reciprocal trade agreements also authority to represent this association at hearings in opposition to the Cole bill.

GEORGE W. STRAWN,
President, Southern Oklahoma Oil & Gas Association.

RESOLUTIONS OF BOARD OF MID-CONTINENT OIL & GAS ASSOCIATION

Whereas the petroleum industry has, by its own enterprise, with the cooperation of the State governments, improved its methods of production, refining, and transportation, and has constantly diminished the amount of preventable waste, thus enabling it to more fully meet all regular and emergency demands made upon it either in peace or in war; and

Whereas it is the opinion of the petroleum industry in the Mid-Continent area that H. R. 7372 would obstruct rather than aid the cause of conservation, in that the regulation and control of the production and transportation activities of the oil industry by a bureau of the Federal Government would complicate and duplicate present supervision by State regulatory agencies (which naturally have closer contact with and better understanding of the problems involved), and would create conflicts of authority and jurisdiction; now, therefore, be it

Resolved by the board of directors of the Mid-Continent Oil & Gas Association, in annual meeting assembled, That it opposes the passage of H. R. 7372 as being contrary to the best interest of the Nation, the States, the consuming public, and the petroleum industry.

Done at Tulsa, Okla., the 18th day of December 1939.

Certified as correct copy February 26, 1940:

CLAREL B. MAPES,
General Secretary.

RECOMMENDATIONS TO THE INTERSTATE OIL COMPACT COMMISSION, GOVERNORS OF THE OIL PRODUCING STATES, AND STATE REGULATORY BODIES

A REPORT AND RESOLUTION BY A COMMITTEE OF THE INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, OKLAHOMA CITY, OKLA., AUGUST 15, 1939

Whereas there is evidence before the oil industry and the regulatory bodies in the several States wherein oil is produced, indicating that there is a possibility of waste in the production of oil as evidenced by the statement made in the recent order of the Railroad Commission of Texas, wherein it says:

"In order to prevent waste and enable the commission to study the overground storage in Texas and the waste of crude oil by evaporation and to enable the commission to make bottom-hole pressure tests in various fields, and in order that the commission may investigate the physical conditions in the various fields including existence of dead wells in said fields; and

"Whereas the commission finds that waste is imminent due to the overproduction of crude petroleum, oil, and condensate"; and

Whereas the opinion has been expressed by the President of the United States, in his letter foreshadowing the introduction of the Cole bill, which is now before a committee of Congress for investigation and study, that waste exists in the production of crude petroleum in the United States; and

Whereas the Cole bill above referred to is in fact pending before a subcommittee of the Interstate and Foreign Commerce Committee of the House of Representatives for study, and looking to a report by that committee to the House when Congress convenes in January; and

Whereas the price of crude oil within the past 12 months has been drastically reduced, resulting in a price today that averages far below the average net cost of producing oil in the United States in the year 1934, as determined by a Government investigation made at that time; and

Whereas since the aforesaid report was made, many costs have been added to the industry, including social-security tax, increase in wage scales, material costs, maximum hours of labor, and particularly increased taxes; and

Whereas the aforesaid conditions have already resulted in the accelerated abandonment of wells of small and settled production, and unless corrected, this condition threatens the wholesale extinction of thousands of such small producing wells and the permanent loss of vast amounts of oil in place which otherwise will be recovered through the years, which now furnishes and will continue to furnish employment to a large number of men; and

Whereas the conditions referred to, if the same exist, require scientific study by and action on the part of the different regulatory bodies of the several oil-producing States, to the end that the purposes and powers of the Interstate Oil Compact Commission as stated in its articles of organization and statutes applicable thereto should be realized and the regulation of crude petroleum production be preserved in the hands of the State bodies; and

Whereas it is felt that insufficient consideration has been given by the regulatory bodies of the several States to the recommendations made by the committee on supply and demand, of the Independent Petroleum Association of America; and

Whereas it is of vital concern to the independent producers of crude oil in the United States, the oil industry as a whole, and to the people of the United States, that waste at all times be avoided and a proper price obtained for crude oil.

Now, therefore, we, a committee, this day appointed by the president of the Independent Petroleum Association of America, do recommend to the Interstate Compact Commission, which is to meet in Oklahoma City on this 15th day of August 1939, the following specific things:

1. That as a temporary measure only, we approve the recent order of the Railroad Commission of Texas, for a 15-day shut-down, and now request the proper bodies, legal or voluntary, in the several oil-producing States, to proceed immediately to follow such action on the part of the Railroad Commission of Texas in ordering and obtaining a shut-down of all producing oil wells for the 15-day period so covered by the order of the Railroad Commission of Texas.

2. That during said shut-down a like study be made in all States as outlined in the aforesaid order of the Railroad Commission of Texas.

3. That the Railroad Commission of Texas be requested to call a general meeting within said 15-day period similar to the one held by it in December 1938, to which the representatives of the regulatory bodies of the several oil-producing States be invited and at which meeting the executives of the major purchasing companies be invited to appear and place before the commission the information which may be needed to enable it and the other compact and cooperating States to determine and formulate a definite and permanent program, having as its objective the correction of such improper producing conditions as may be found to exist within the industry.

4. That the Interstate Compact Commission call attention in a favorable manner to the following recommendation which we now make to the regulatory bodies:

That following the 15-day shut-down period above referred to, production of crude oil be held sufficiently below current consumption so that by May 1, 1940, stocks of crude oil and the products thereof be reduced to a proper working level, and that thereafter production be held currently within consumptive demand.

5. That the regulatory bodies of the several oil-producing States be urged to recheck the allocation of production of oil to the various fields to determine inequalities, if such exist, and that such adjustments as may be needed to correct such conditions be made effective by September 1, 1939, and that thereafter whenever requests for special allowable or exceptions are presented, that the regulatory body to whom the same may be presented hear the same at the general or special open hearing next following the giving of 10 days' notice of the pendency of any such application, such notice, if not otherwise provided, to be incorporated in the call for such meeting.

6. That the regulatory bodies of the several oil-producing States be urged to reexamine all fields to determine whether any physical waste is resulting from the present rate of production therein and, if so, to immediately reduce the production in any such field so as to correct such condition.

7. That the regulatory bodies of the several oil-producing States be urged to at all times give proper consideration to the determination of legitimate, State-wide, consumptive, market demand for crude oil as contra-distinguished from ficticious or paper demand and/or selective buying for individual fields.

8. That the regulatory bodies of the several oil-producing States, upon fixing the monthly allowable for the respective States, be urged to not thereafter change the same, nor permit the actual production to exceed the same.

9. That we recommend the fixing of top allowables for the various fields in each State, to the end that the drilling of unnecessary wells may be avoided.

In addition to the foregoing recommendations to the Interstate Oil Compact Commission and the State regulatory bodies, we offer the following general recommendations:

(*a*) That the present bad and, in some cases, unfair marketing practices now prevalent, be corrected by the companies marketing petroleum products, which conditions are now encouraged by the failure of the Federal Trade Commission to approve a proper marketing code.

(*b*) That the Governor of the State of Illinois be requested to call a special session of the legislature of that State to pass a conservation statute, to the end that the wasteful and destructive production of oil in Illinois be discontinued.

(*c*) That the importers of crude oil be requested to refrain from importing crude oil for a like period as the shut-down period which may be made effective by the State of Texas, and also reduce imports in like proportions as domestic production is reduced thereafter.

(*d*) That because of the outstanding harm which is resulting from excessive runs to stills, the refiners of crude oil be urged to reduce runs sufficiently to cause the reduction of refined stocks to a proper economic level by September 30.

(*e*) That we recommend to the Independent Petroleum Association of America that it cause its committee of supply and demand to see that these recommendations are given proper consideration by the regulatory bodies of the several oil-producing States and in conjunction with the executive officers of that association, see that adequate subcommittees are appointed from the ranks of the association within the several oil-producing States, to assist in the obtaining of such results.

(The brief of Mr. Tom Anglin, Holdenville, Okla., and Mr. W. J. Holloway, Oklahoma City, Okla., above referred to, is as follows:)

LEGAL BRIEF OF TOM ANGLIN, ESQ., HOLDENVILLE, OKLA., W. J. HOLLOWAY, ESQ., OKLAHOMA CITY, OKLA., BEFORE SUBCOMMITTEE ON PETROLEUM, HEARINGS ON H. R. 7372

BRIEF AS TO THE CONSTITUTIONALITY OF HOUSE RESOLUTION 7372

The Petroleum Conservation Act (H. R. 7372) was introduced in the House of Representatives, Seventy-sixth Congress, on July 26, 1939. Its avowed purpose is to regulate the production and production methods of crude petroleum in the United States. The bill provides for the appointment of a commissioner of petroleum conservation, who shall act under the supervision of the Secretary of the Interior. It authorizes the commissioner to investigate the conditions of petroleum production in the oil fields of the United States with reference to waste and the prevention thereof. Should the commissioner find avoidable waste, he is authorized to issue regulations designed to prevent such waste. Violation of these regulations renders the violator liable to fine and imprisonment. The commissioner may avail himself of the courts of the United States for the purpose of enforcing his regulations. Provision is made in the act for hearings before the commissioner.

Section 2 of the Cole bill contains the following congressional finding:

"The Congress hereby finds that in the production and storage of petroleum from deposits situated within the United States, the employment of methods and practices which are wasteful of petroleum and of the reservoir energy available for the recovery thereof from such deposits—

"(1) Is inimical to the maintenance of reserves of petroleum, and of the facilities for the recovery and transportation thereof, available for military and supporting civilian needs in an adequate national defense;

"(2) Burdens and obstructs interstate commerce and causes harmful diversion of such commerce;

"(3) If not controlled, will further and increasingly burden and obstruct interstate commerce and will unduly limit the usefulness of instruments of transportation in and cause the abandonment of facilities for such commerce;

"(4) Causes interstate commerce to be the means of encouraging such wasteful methods and practices; and

"(5) Constitutes an unfair method of competition in interstate commerce."

Before looking into the cases dealing with the constitutionality of the proposed measure, it appears desirable to evaluate, from a legal standpoint, these congressional findings of fact.

EFFECT OF THE FINDINGS OF FACT IN THE BILL

If the proposed legislation is enacted into law, Congress will have found and declared in brief that the prevention of avoidable waste in the production of petroleum is necessary to our national defense, and that such waste constitutes a burden upon, and interference with, interstate commerce to such an extent as to give the Federal Govetment the constitutional power to regulate the means and methods employed by those engaged in the production of petroleum. A court, in passing upon the constitutionality of the bill, may consider these findings. It will not, however, be bound thereby. To do so, would be to rob the court entirely of its judicial prerogative of passing upon the constitutionality of congressional acts.

In *Carter* v. *Carter Coal Company* ((1936) 298 U. S. 238, 80 L. Ed. 1160), the court held unconstitutional the Bituminous Coal Conservation Act of 1935. This act, like the Cole bill, contained a recital that the bill was necessary, by reason of certain conditions then existing in the bituminous coal industry, in order to promote the general welfare of the Nation, and to protect interstate commerce. With respect to these recitals, the Court said:

"These affirmations—and the further ones that the production and distribution of such coal 'directly affect interstate commerce,' because of which and of the waste of the national coal resources and other circumstances, the regulation is necessary for the protection of such commerce—do not constitute an exertion of the will of Congress which is legislation, but a recital of considerations which in the opinion of that body existed and justified the expression of its will in the present act."

Further in its opinion, the Court characterized as a "pure assumption" the statement contained in the act that the conditions described directly affect interstate commerce.

Cooley on Constitutional Limitations, volume 1, page 194, says:

"Nor is it in the power of the legislature to bind individuals by a recital of facts in a statute, to be ised as evidence against the parties interested. A recital of facts in the preamble of a statute may perhaps be evidence, where it relates to matters of a public nature, as that riots or disorders exist in a certain part of the country; but where the facts concern the rights of individuals, the legislature cannot adjudicate upon them."

The principal was aptly stated by a witness testifying before a subcommittee of the Committee on Interstate and Foreign Commerce, with reference to the Thomas-Disney bill in 1934, in the following language:

"You might declare in the preamble (of a bill) that the popping of corn in the State of Indiana would have a serious effect on commerce, but you could not prevent thereby the Supreme Court for going in and ascertaining what the true facts were."

DOES THE BILL MEET CONSTITUTIONAL REQUIREMENTS WEHN MEASURED BY THE NATIONAL DEFENSE THEORY?

In response to this question, it is unqualifiedly submitted that the Federal Government has no constitutional authority, either under its authority to provide for the national defense or under the commerce clause, to control or regulate the production of crude petroleum. Insofar as production of crude petroleum may be constitutionally regulated, it is a matter which falls within the reasonable exercise of the police power of the several States.

Article 1, section 8, clause 1, of the Constitution provides:

"The Congress shall have power to lay and collect taxes, duties, imposts, and excises, to pay the debts and provide for the common defense and general welfare of the United States."

It is assumed by some that this clause gives to Congress the right to provide for the common defense and general welfare of the United States. A careful reading of the clause will demonstrate that no such power is given to Congress. What the clause does give to Congress is the power to lay and collect taxes in order to provide for the common defense and general welfare. Congress may levy and collect taxes and spend the money so collected in the interests of national defense and the general welfare, but it may not enact regulatory legislation under this clause having as its aim the promotion of national defense and the general welfare, however worthy these objectives may be.

A recent case in point is *United States* v. *Butler* ((1936) 297 U. S. 1, 80 L. Ed. 477). The Court here held unconstitutional the Agricultural Adjustment Act of 1933. It was urged that the act should be sustained under the general welfare clause. In rejecting this theory Mr. Justice Roberts said:

"The clause thought to authorize the legislation—the first—confers upon the Congress power 'to lay and collect taxes, duties, imposts and excises, to pay the debts and provide for the common defense and general welfare of the United States * * *.' It is not contended that this provision grants power to regulate agricultural production upon the theory that such legislation would promote the general welfare. The Government concedes that the phrase to 'provide for the general welfare' qualifies the power 'to lay and collect taxes.' The view that the clause grants power to provide for the general welfare, independently of the taxing power, has never been authoritatively accepted. Mr. Justice Story points out that if it were adopted 'it is obvious that under color of the generality of words. to "provide for the common defense and general welfare" the Government of the United States is, in reality, a government of general and unlimited powers, notwithstanding the subsequent enumeration of specific powers.' The true construction undoubtedly is that the only thing granted is the power to tax for the purpose of providing funds for payment of the Nation's debts and making provision for the general welfare."

One must look elsewhere in the Constitution to find authority for congressional regulatory action under its war powers. This authority is found in the eleventh twelfth, and thirteenth clauses of article I, section 8. These clauses give to Congress the right to declare war, to raise and support armies, and to provide and maintain a navy. It may enact, under these clauses, such regulatory legislation as it chooses incident to the proper maintenance of the armed forces. But Congress possesses no general power to legislate with respect to the "national defense" other than levying taxes and spending money therefor. It is submitted that an attempt, such as the present one, to enact regulatory legislation for the general purpose of providing for the national defense finds no support in the Constitution or in the authorities construing it.

It has been ably urged by no less an authority than Mr. Chief Justice Hughes that Congress cannot, under its national defense powers, regulate the production of petroleum. In 1926, Mr. Hughes appearing as a private attorney before the Federal Oil Conservation Board, briefed the question of the right of the National Government to regulate the production of oil within the States. With reference to the existence of such authority under the national defense theory, Mr. Hughes said:

"I am aware that it has been suggested that such Federal power to control production within the States might be asserted by Congress because it could be deemed to relate to the provision for the common defense and the promotion of the general welfare.

"Reference is sometimes made, in support of this view, to the words of the preamble of the Federal Constitution. But, as Story says:

" 'The preamble never can be restored to, to enlarge the powers confided to the General Government or any of its departments. It cannot confer any power per se; it can never amount by implication, to an enlargement of any power expressly given' (1 Story on the Constitution, sec. 462).

"And this statement was approved by the Supreme Court of the United States in *Jacobson* v. *Massachusetts* (197 U. S. 11, 22), where it was said:

" 'Although that preamble indicates the general purposes for which the people ordained and established the Constitution, it has never been regarded as the source of any substantive power conferred on the Government of the United States, or any of its departments. Such powers embrace only those expressly granted in the body of the Constitution, and such as may be implied from those so granted. Although, therefore, one of the declared objects of the Constitution was to secure the blessings of liberty to all under the soveriegn jurisdiction and authority of the United States, no power can be exerted to that end by the United States, unless, apart from the preamble, it be found in some express delegation of power, or in some power to be properly implied therefrom' (1 Story on the Constitution, sec. 462).

"The suggestion to which I have referred is an echo of an attempt to construe article I, section 8, subdivision 1, of the Constitution of the United States, not as a power [6] to lay and collect taxes, duties, imposts, and excises, to pay the debts, and provide for the common defense and general welfare of the United States,' but as conferring upon Congress two distinct powers, to wit: (1) The power of taxation; and (2) the power to provide for the common defense and general welfare. In this view, it has been urged that Congress has the authority to exercise any power that it might think necessary or expedient for the common defense or the general welfare of the United States. Of course, under such a construction, the Government of the United States would at once cease to be one of enumerated powers and the powers of the States would be wholly illusory and would be at any time subject to be controlled in any matter by the dominent Federal will exercised by Congress on the ground that the general welfare might thereby be advanced. That, however, is not the accepted view of the Constitution (1 Story on the Constitution, secs. 907–908; 1 Willoughby on the Constitution, sec. 22). The Government of the United States is one of enumerated powers and is not at liberty to control the internal affairs of the States, respectively, such as a production within the States, through assertion by Congress of a desire either to provide for the common defense or to promote the general welfare.

"This is too elementary to require discussion and it is impossible to believe that the legal advisers of the board will suggest that it proceed on any different view.

"Of course, the Government is entitled to provide for the common defense, and to secure suitable provision of oil for all its proprietary uses and for its naval and military service. It does not appear that the making of such provision requires, or involves, the exercise of any authority to control production within the States and thus take over the internal concerns of the States.

"The Federal Government has a large public domain. Instead of granting future oil leases it can keep the oil within its property not already disposed of, if it so desires, and conserve it for itself. If the oil tracts within its domain are not deemed to be sufficient for this purpose, the Government can acquire other tracts. There is no limit to the power of acquisition of oil properties in order to meet the needs of the Army and Navy, or to provide for other governmental uses, except the limit which Congress may put upon the use of public moneys for that purpose and the disposition of the people to pay taxes. So far as power is concerned, the Government can acquire for its uses all the oil lands that it needs, if it is willing to pay for them; and, as has been indicated, if the Government desires to conserve the oil in the ground, it can do so on its own properties within the public domain, and if this oil supply is threatened by contiguous properties, Congress may direct the acquisition of such properties, upon proper compensation to the owners, to the extent deemed necessary.

"It is also possible for Congress to purchase whatever oil or oil products, so far as it may deem it to be desirable to do so, in order to provide for the future, and store them in appropriate receptacles which will hold it without waste.

"The acquisition of oil properties or of oil and gas products, in order to meet the needs of the United States as a proprietor, is a mere question of an estimate of needs and of financial policy.

"Provision for governmental uses, to meet the needs of the United States as a proprietor, is quite distinct from an attempted regulation or curtailment of production within the States in a general public interest, for the purpose of carrying out a policy of conserving oil in the ground so that it may await the economic needs of the country at large in the future. The latter would be the exercise not of the power to tax and to purchase for governmental uses, but of a power to control production upon private property within the States and subject to the sovereignty of the States, respectively. It is not conceivable that any theory will be advanced by the legal advisers of the Government to support such a course of action, however desirable a policy of conservation it may be deemed to be. It is idle under the Constitution to attempt to secure by Federal regulation the curtailment of production or to require unified operations in production by private owners within fields subject to the jurisdiction of the States.

"The conservation of oil in the ground within such territory by governmental control of mere production, or the taking of oil out of the ground, is a question for the States, so far as such control may constitutionally be exercised under our form of government."

The correctness of Mr. Hughes' construction of article I, section 8, caluse 1, of the Constitution was affirmed 10 years later in *United States* v. *Butler*, supra.

In *United States* v. *Eason Oil Company* (U. S. D. C. W. D. Okla. 1934; 8 Fed. Supp. 365), an inferior court, in passing on the national defense theory as a justification for Federal regulation of oil production, reached precisely the same conclusion as did Mr. Hughes. The court had before it the constitutionality of the Code of Fair Competition for the Petroleum Industry promulgated by the President under the National Industrial Recovery Act. It was urged to the court that the code was necessary in the interest of national defense. With reference to this contention, the court said:

"The next contention of the Government is that petroleum is an irreplaceable natural resource essential to the national defense; and that, since Congress is given the power to declare war, raise and support an army, provide and maintain a navy, and make laws which will be necessary to carry into effect those powers, Congress has power to conserve natural resources. I shall not take time to enter into any particular discussion of this point because it is not necessary. If Congress is of the opinion that any resource in this Nation is essential to the maintenance of this Government and its proper defense, it has ample power under the Constitution to purchase oil lands and hold them for the benefit of the Government. But, so long as the individual citizen is permitted to hold property, his rights in property are protected under the Constitution."

It seems clear that the power of Congress to provide for the national defense, under the first clause of section 8, article 1, Congress is limited to levying taxes for such purpose. Under the eleventh, twelfth, and thirteenth clauses of this section, Congress has the express authority to enact legislation for the purpose of declaring war, raising and supporting armies and providing and maintaining a navy. It is too self-evident to be worthy of serious argument that the regulation of the production of crude petroleum is a subject far afield from the congressional authority to declare war, raise armies and maintain a navy. These entirely commendable objects may be adequately accomplished by Congress under the power granted to it in the first clause of section 8 to appropriate public moneys for the common defense.

MAY THE CONSTITUTIONALITY OF THE BILL BE SUSTAINED UNDER THE COMMERCE CLAUSE?

From the beginning of production of oil in the State of Pennsylvania and on westward through the States of Ohio, Indiana, Illinois, and into the Southwest through the States of Kansas, Oklahoma, Texas, New Mexico, and throughout the Rocky Mountain States of Colorado, Wyoming, and Montana and more recently in the Southern States of Louisiana, Mississippi, and Arkansas, the universal rule of property has been well established by all of the States that oil and gas while contained in the earth is a part of the realty. Conveyances of title in each and all of the States, unless otherwise reserved, passes title to and vests in the vendee title to the oil and gas in place or the exclusive right to explore for and capture all of the oil and gas which may migrate into or under such owner's land. It will, therefore, be apparent that the proposed legislation is designed to control in effect the use of privately owned realty located within and subject to the police power of the various States. The terms and provisions of the Federal control bill indicate clearly that its scope of regulation terminates when oil is brought to the surface. All of the underground characteristics of oil-bearing strata referred to in the bill, as factors for consideration in the promulgation of regulations with respect to avoidable waste, are conditions existing within and under the land itself.

Measured by every decision of the Supreme Court of the United States from Marshall to the present day, Congress is devoid of power to extend its authoritative control to the regulation of the manner or methods to be employed by any citizen in the use of privately owned real estate. It may be well to call attention to the vast areas granted to and now owned by many of the oil-producing States as State-owned lands. In most instances these lands are reserved to the use of the common schools of the States. This is true particularly in the States of Texas, Oklahoma, Kansas, Colorado, Wyoming, and Montana. For example, in the State of Wyoming in excess of 3½ million acres are owned in fee by the sovereign State, which under all of the decisions of that and other States includes the oil and gas and all of the rights incidental or appurtenant thereto while such oil or gas is lying within and under such lands. We know of no principle of law or constitutional authority that will permit Congress to extend the control of the Federal Government to such lands or the rights and privileges incident thereto to the exclusion of the State holding such lands as the individual property of the State.

To admit the constitutional authority of Congress to exercise control or regulation of exclusively State or private property rights as contemplated in the proposed legislation would be to vest Congress with the power to exercise complete control and regulation upon and over all private property of every kind and character, even to the extent of changing the laws of dissent and distribution of property of the individual States as said by the Supreme Court of the United States in *Ohio Oil Co.* v. *Indiana* (177 U. S. 190, 44 Law Ed. 729):

"In view of the fact that regulations of natural deposits of oil and gas and the right of the owner to take them as an incident of title in fee to the surface of the earth, as said by the Supreme Court of Indiana, is ultimately but a regulation of real property, and they must hence be treated as relating to the preservation and protection of rights of an essentially local character."

Article I, section 8, clause 3, of the Constitution provides as follows:

"The Congress shall have power * * * to regulate commerce with foreign nations and among the several States and with the Indian tribes."

The Supreme Court has interpreted the commerce clause in a variety of cases. Insofar as our inquiry is concerned, and for the purpose of better understanding these cases, they may be classified as follows: First, cases incolving State regulatory and tax statutes; and, second, cases involving Federal regulatory statutes.

Any research into the powers of the Federal Government under the commerce clause must necessarily start with the opinion of Mr. Chief Justice Marshall in *Gibbons* v. *Ogden* ((1824) 9 Wheat. 1, 6 L. Ed. 23), wherein he said:

"The genius and character of the whole Government seems to be, that its action is to be applied to all the external concerns of the Nation, and to those internal concerns which affect the States generally; but not to those which are completely within a particular State, which do not affect other States, and with which it is not necessary to interfere, for the purpose of executing some of the general powers of the Government. The completely internal commerce of a State, then, may be considered as reserved for the State itself."

Another early expression of the Court on this subject is found in *Veazie* v. *Moor* ((1852) 14 Howard 568, 14 L. Ed. 545). In defining the commerce clause, it is said:

"The phrase can never be applied to transactions wholly internal, between citizens of the same community, or to a policy and laws whose ends and purposes and operations are restricted to the territory and soil and jurisdiction of such community. Nor can it be properly concluded that, because the products of domestic enterprise in agriculture or manufacture, or in the arts, may ultimately become the subjects of foreign commerce, that the control of the means or the encouragements by which enterprise is fostered and protected, is legitimately within the import of the phrase 'foreign commerce,' or fairly implied in any investiture of the power to regulate such commerce. A pretention as far reaching as this, would extend to contracts between citizen and citizens of the same State, would control the pursuits of the planter, the grazier, the manufacturer, the mechanic, the immense operations of the collieries and mines and furnaces of the country; for there is not one of these avocations, the results of which may not become the subjects of foreign commerce, and be borne either by turnpikes, canals, or railroads, from point to point within the several States, towards an ultimate destination, like the one above mentioned. Such a pretention would effectually prevent or paralyze every effort at internal improvement by the several States; for it cannot be supposed that the States would exhaust their capital and their credit in the construction of turnpikes, canals, and railroads, the remuneration derivable from which, and all control over which, might be immediately wrested from them, because such public works would be facilities for a commerce which, whilst availing itself of those facilities, was unquestionably internal, although intermediately or ultimately it might become foreign."

Cos. v *Town of Errol* ((1886) 116 U. S. 517, 29 L. Ed. 715), presented the question of the legality of an ad valorem tax upon timber which had been cut and collected in a stream in the State of Maine. The timber was destined to be floated downstream to a point outside the State. It was urged that the tax levy burdened interstate commerce. In holding the levy, proper, the Court declared that the products of the State are liable to be taxed like other property within the State, although intended for exportation to another State. In its opinion, the Court pointed out that products may be intended to be for exportation, yet they may never be exported, for "the owner has a perfect right to change his mind." This case may be said to be the initial authority for the oft-repeated rule that interstate commerce does not begin until the products of a State actually enter the "stream of commerce."

In *Kidd* v. *Pearson* ((1888) 128 U. S. 1, 32 L. Ed. 346), there was involved the validity of an Iowa statute prohibiting the manufacture of distilled spirits within the confines of the State. Kidd operated a distillery in Iowa, but he contended that statute was inapplicable because the entire product of the distillery was exported from the State. In holding the Iowa statute was not an interference with the power of Congress to regulate commerce, the Court said:

"No distinction is more popular to the common mind, or more clearly expressed in economic and political literature, than that between manufacture and commerce. Manufacture is transformation—the fashioning of raw materials into a change of form for use. The functions of commerce are different.

"The buying and selling and the transportation incidental thereto constitute commerce; and the regulation of commerce in the constitutional sense embraces the regulation at least of such transportation. The legal definition of the term as given by this court in *County of Mobile* v. *Kimball* (102 U. S. 691, 702, (26: 238, 241)), is as follows: 'Commerce with foreign nations and among the States, strictly considered, consists in intercourse and traffic, including in these terms navigation and the transportation and transit of persons and property, as well as the purchase, sale, and exchange of commodities.' If it be held that the term includes the regulation of all such manufactures as are intended to be the subject of commercial transactions in the future, it is impossible to deny that it would also include all productive industries that contemplate the same thing. The result would be that Congress would be invested, to the exclusion of the States, with the power to regulate, not only manufacture, but also agriculture, horticulture, stock raising, domestic fisheries, mining—in short, every branch of human industry. For is there one of them that does not contemplate, more or less clearly, an interstate or foreign market? Does not the wheat grower of the Northwest, and the cotton planter of the South, plant, cultivate, and harvest his crop with an eye on the prices at Liverpool, New York, and Chicago? The power being vested in Congress and denied to the States, it would follow as an inevitable result that the duty would devolve on Congress to regulate all of these delicate, multiform, and vital interests—interests which in their nature are, and must be, local in all the details of their successful management.

"It is not necessary to enlarge on, but only to suggest, the impracticability of such a scheme, when we regard the multitudinous affairs involved, and the almost infinite variety of their minute details."

The opinion of the Court in *Heisler* v. *Thomas Colliery Company* ((1922) 260 U. S. 245, 67 L. Ed. 237) is of particular interest. This case involved mining, an industry similar to the production of oil. The validity of the imposition of a tax by Pennsylvania of 2½ percent upon anthracite coal was the issue presented. The coal company asserted that the tax was illegal and constituted a burden on interstate commerce. The coal mined in Pennsylvania was intended to be, and was in fact, exported from the State to other States. It was asserted that the products of a State that have, or are destined to have, a market in other States, are subjects of interstate commerce, although they have not moved from the place of their production or preparation. The Court in this connection said:

"The reach and consequences of the contention repel its acceptance. If the possibility, or, indeed, certainty, of exportation of a product or article from a State, determines it to be in interstate commerce before the commencement of its movement from the State, it would seem to follow that it is in such commerce from the instant of its growth or production; and in the case of coals, as they lie in the ground. The result would be curious. It would nationalize all industries, it would nationalize and withdraw from State jurisdiction and deliver to Federal commercial control the fruits of California and the South, the wheat of the West and its meats, the cotton of the South, the shoes of Massachusetts, and the woolen industries of other States, at the very inception of their production or growth; that is, the fruits unpicked, the cotton and wheat ungathered, hides and flesh of cattle yet 'on the hoof,' wool yet unshorn, and coal yet unmined, because they are, in varying percentages, destined for and surely to be exported to States other than those of their production."

Oliver Iron Mining Co. v. *Lord* ((1923) 262 U. S. 172, 67 L. Ed. 929) involved the validity of a Minnesota statute levying an occupation tax equal to 6 percent of the value of iron ore mined in the State. It was contended by the mining company that from the time word was first started to remove the ore from the ground there existed a continuous process, ending only with the final delivery of the ore to the steel mills in another State. The mining company contended that since the operations were a part of a continuous stream of activity that the mining operation thereby became acts in interstate commerce, and by reason thereof, the State was precluded from levying the tax thereon. In holding to the contrary, the Court said:

"Plainly the facts do not support the contention. Mining is not interstate commerce, but, like manufacturing is a local business, subject to local regulation and taxation. * * * Its character in this regard is intrinsic, is not affected by the intended use or disposal of the product, is not controlled by contractual engagements, and persists even though the business be conducted in close connection with interstate commerce."

Utah Power and Light Co. v. *Pfost* ((1932) 286 U. S. 165, 76 L. Ed. 1038) concerned the validity of a Utah tax levied on the production of electricity which was thereafter transported and sold in other States. Because of the continuous nature of the operation whereby electrcity was generated by water power and instantly transmitted out of the State, the contention was made that the entire process inclusive of the production of such power was in interstate commerce. The Court held this view to be without merit. It was there said:

"We are satisfied, upon a consideration of the whole case, that the process of generation is as essentially local as though electrical energy were a physical thing, and to that situation we must apply, as controlling, the general rule that commerce does not begin until manufacture is finished, and hence the commerce clause of the Constitution does not prevent the State from exercising exclusive control over the manufacture."

The *Landmark case* of *Champlin Refining Co.* v. *Corporation Commission of Oklahoma* ((1932) 286 U. S. 210, 76 L. Ed. 1063) involved the validity of certain orders of the Oklahoma Corporation Commission issued purusant to Oklahoma's oil conservation statutes. Here the Court came directly at grips with the precise issue which it must face should it be called upon to determine the constitutionaltiy of the proposed legislation. With respect to the contention that the statute and orders of the commission burdened commerce, the Court said:

"Plaintiff contends that the act and proration orders operate to burden interstate commerce in crude oil and its products in violation of the commerce clause. It is clear that the regulations prescribed and authorized by the act and the proration established by the commission apply only to production and not to sales or transportation of crude oil or its products. Such production is essentially a mining operation and therefore is not a part of interstate commerce even though the product obtained is intended to be and in fact is immediately shipped in such commerce."

Attention is called to *Chassaniol* v. *City of Greenwood* ((1934) 291 U. S. 584, 78 L. Ed. 1004). Here the appellant, was engaged in the cotton brokerage business in Greenwood, Miss. The city levied a $50 annual brokerage tax upon each person engaged in the cotton brokerage business. It appeared that much long-staple cotton grown in the area was first ginned, then transported to Greenwood and there bought and compressed for sale and shipment in interstate commerce. Appellant contended that when the cotton reached Greenwood, it was in the stream of interstate commerce, and that brokers dealing with it at that point were likewise engaged in interstate commerce and that the city was without constitutional authority to levy an occupation tax upon him and others similarly engaged. The court held that Chassaniol's contention was without merit. It was there said that all of the activities prior to the sale and actual shipment of the cotton to points out of the State were transactions local to Mississippi, and, accordingly, that those so engaged might be subjected to an occupation tax.

It will be remembered that the Federal antitrust legislation is based upon the power of the National Government to regulate interstate commerce. Although an enterprise may by its operations violate the antitrust laws, yet if it is not a part of interstate commerce, such violations are not punishable by Federal authorities. The cases dealing with the extent of the Federal power under the antitrust laws, over various enterprises are of interest because they define with considerable clarity the line between interstate and intrastate business activities.

One of the earliest antitrust cases was *United States* v. *Knight* ((1895) 156 U. S. 1, 39 L. Ed. 325). The purpose of the action by the Government was to restrain an alleged trust existing in the sugar industry. The Government predicated its case upon the theory that the defendants had created a monopoly in the manufacture of sugar. The Government's case rested only on the manufacture of sugar, and not on marketing or distribution; the Court held that the action could not be maintained. The Court said:

"Commerce succeeds to manufacture, and is not a part of it."

The *Coronado Coal case* (*United Mine Workers of America* v. *Coronado Coal Co.* (1922), 259 U. S. 344, 66 L. Ed. 975) aptly illustrates the delimitations of the commerce clause. This case involved an action brought by the coal company against the United Mine Workers under the antitrust law.

The coal company, in support of its claim for relief, showed that the mine workers had, by strikes and acts of violence and lawlessness, closed down a number of its mines which were engaged in producing coal which was shipped in interstate commerce. Upon this showing, relief was denied to the coal company in the following language:

"And so in the case at bar—coal mining is not interstate commerce, and obstruction of coal mining, though it may prevent coal from going into interstate commerce, is not a restraint of that commerce. * * *"

In *Delaware L. & W. R. R. Co.* v. *Yurkonis* ((1915), 238 U. S. 439, 59 L. Ed. 1397), the appellee, Yurkonis, was employed by the railroad as a miner in a Pennsylvania coal mine. Yurkonis was injured in a mine accident. He sued the railroad for damages in a common-law action. The railroad asserted that since the coal mined by Yurkonis was used to operate its trains in interstate commerce that the injury was governed by the Federal Employers' Liability Act. In denying this contention, the Court said:

"The averments of the complaint as to the manner of the receiving of the injury by plaintiff showed conclusively that it did not occur in interstate commerce. The mere fact that the coal might be or was intended to be used in the conduct of interstate commerce after the same was mined and transported did not make the injury one received by the plaintiff while he was engaged in interstate commerce. The injury happening when the plaintiff was preparing to mine the coal was not an injury happening in interstate commerce, and the defendant was not then carrying on interstate commerce—facts essential to recovery under the Employers' Liability Act."

In *Hammer* v. *Dagenhart* ((1918), 247 U. S. 251, 62 L. Ed. 1101), was involved the constitutionality of the Federal Child Labor Act which prohibited the transportation in interstate commerce of goods manufactured in factories employing children under the age of 14. The court in its opinion carefully considered the various interstate commerce cases commencing with *Gibbons* v. *Ogden*. The Court distinguished the Federal acts, previously upheld, dealing with pure foods and drugs, and the sale of intoxicating liquors, upon the ground that the manufactured goods, the shipment of which would be a violation of the Child Labor Act, were in themselves harmless. The Court concluded that while the purposes of the act may have been highly commendable, yet the evil sought to be eradicated fell within the proper scope of the police powers of the various States. The Court said in part as follows:

"In interpreting the Constitution it must never be forgotten that the Nation is made up of States, to which are entrusted the powers of local government. And to them and to the people the powers not expressly delegated to the National Government are reserved. *Lane County* v. *Oregon* (7 Wall. 71, 76, 19 L. Ed. 101, 104). The power of the States to regulate their purely internal affair by such laws as seem wise to the local authority is inherent, and had never been surrendered to the General Government. *New York* v. *Miln* (11 Pet. 102, 139, 9 L. Ed. 648, 662); *Slaughter-House cases* (16 Wall. 36, 63, 21 L. Ed. 394, 404); *Kidd* v. *Pearson*, supra. To sustain this statute would not be, in our judgment, a recognition of the lawful exertion of congressional authority over interstate commerce, but would sanction an invasion by the Federal power of the control of a matter purely local in its character, and over which no authority has been delegated to Congress in conferring the power to regulate commerce among the States.

"We have neither authority nor disposition to question the motives of Congress in enacting this legislation. The purposes intended must be attained consistently with constitutional limitations, and not by an invasion of the powers of the States. This Court has no more important function than that which devolves upon it the obligation to preserve inviolate the constitutional limitations upon the exercise of authority, Federal and State, to the end that each may continue to discharge, harmoniously with the other, the duties entrusted to it by the Constitution.

"In our view the necessary effect of this act is, by means of a prohibition against the movement in interstate commerce of ordinary commercial commodities, to regulate the hours of labor of children in factories and mines within the States—a purely State authority. Thus the act in a twofold sense is repugnant to the Constitution. It not only transcends the authority delegated to Congress over commerce, but also exerts a power as to a purely local matter to which the Federal authority does not extend. The far-reaching result of upholding the act cannot be more plainly indicated than by pointing out that if Congress can thus regulate matters entrusted to local authority by prohibition of the movement of commodities in interstate commerce, all freedom of commerce will be at an end, and the power of the States over local matters may be eliminated, and thus our system of government be practically destroyed."

One can come to no other conclusion but that this language condemns to constitutionality of any legislation by the Congress designed to directly and physically control or regulate the production of any commodity where such production is accomplished wholly within the borders of a single State.

In the historic case of *Schechter Poultry Corporation* v. *United States* (1935) 295 U. S. 495, 79 L. Ed. 1570) the Court concerned itself with the validity of a Live Poultry Code and with the constitutionality of the National Industrial Recovery Act under which the code was promulgated. The code required certain hours of labor, wages, labor conditions, and trade practices in the poultry industry. The appellant Schechter was engaged in New York City in the business of purchasing chickens after they had been shipped into New York, slaughtering them, and then selling them to retail dealers. Schechter contended that the Government, under its commerce powers, was without authority to regulate his local business activities. The Supreme Court agreed with this contention. In its opinion, the Court first asked the question whether the transactions in which Schechter was involved were "in interstate commerce." This question was answered by the Court in the negative. It pointed out that although the chickens purchased by Schechter were for the most part shipped into New York from other States, yet the stream of commerce ended at New York, and Schechter's operations were not a part of it.

The Court then asked the question whether Schechter's transactions directly "affect" interstate commerce so as to be subject to Federal regulation. In answer to this question, the Court said:

"In determining how far the Federal Government may go in controlling intrastate transactions upon the ground that they 'affect' interstate commerce, there is a necessary and well-established distinction between direct and indirect effects. The precise line can be drawn only as individual cases arise, but the distinction is clear in principle. Direct effects are illustrated by the railroad cases we have cited, as, e. g., the effect of failure to use prescribed safety appliances on railroads which are the highways of both interstate and intrastate commerce, injury to an employee engaged in interstate transportation by the negligence of an employee engaged in an intrastate movement, the fixing of rates for intrastate transportation which unjustly discriminate against interstate commerce. But where the effect of intrastate transactions upon interstate commerce is merely indirect, such transactions remain within the domain of State power. If the commerce clause were construed to reach all enterprises and transactions which could be said to have an indirect effect upon interstate commerce, the Federal authority would embrace practically all the activities of the people and the authority of the State over its domestic concerns would exist only by sufferance of the Federal Government. Indeed, on such a theory, even the development of the State's commercial facilities would be subject to Federal control. As we said in the *Minnesota Rate cases* (*Simpson* v. *Shepard*, 230 U. S. 352, 410, 57 L. Ed. 1511, 1546, 33 S. Ct. 729, 48 L. R. A. (N. S.) 1151, Ann. Cas. 1916A, 18): 'In the intimacy of commercial relations, much that is done in the superintendence of local matters may have an indirect bearing upon interstate commerce. The development of local resources and the extension of local facilities may have a very important effect upon communities less favored and to an appreciable degree alter the course of trade. The freedom of local trade may stimulate interstate commerce, while restrictive measures within the police power of the State enacted exclusively with respect to internal business, as distinguished from interstate traffic, may in their reflex or indirect influence diminish the latter and reduce the volume of articles transported into or out of the State.' See, also, *Kidd* v. *Pearson* (128 U. S. 1, 21, 32 L. Ed. 346, 350, 9 S. Ct. 6, 2 Inters. Com. Rep. 232); *Heisler* v. *Thomas Colliery Co.* (260 U. S. 245, 259, 260, 67 L. Ed. 237, 243, 43 S. Ct. 83.)"

The Court commented upon the Government's assertion that the long hours and low wages prevailing in the slaughterhouse industry resulted in the cutting of prices and a demoralization of the entire poultry industry. The Court said that while the wages and hours of employees working in slaughterhouses may have an effect upon interstate commerce, yet this effect is so indirect as not to justify Federal intervention. The Court said that should the Government be permitted to regulate wages and hours among the slaughterhouse men, it could likewise regulate other elements of cost, such as the number of employees, rents, advertising, and all the other processes of production and distribution entering into cost. The Court concluded its opinion by saying:

"The distinction between direct and indirect effects of intrastate transactions upon interstate commerce must be recognized as a fundamental one, essential to the maintenance of our constitutional system. Otherwise, as we have said, there would be virtually no limit to the Federal power, and for all practical purposes we should have a completely centralized government.

* * * * * * *

"It is not the province of the Court to consider the economic advantages or disadvantages of such a centralized system. It is sufficient to say that the Federal Constitution does not provide for it. Our growth and development have called for wide use of the commerce power of the Federal Government in its control over the expanded activities of interstate commerce and in protecting that commerce from burdens, interference, and conspiracies to restrain and monopolize it. But the authority of the Federal Government may not be pushed to such an extreme as to destroy the distinction, which the commerce clause itself establishes, between commerce 'among the several States' and the internal concerns of a State."

In *Carter* v. *Carter Coal Co.* (1936) 298 U. S. 238, 80 L. Ed. 1160), the Court passed upon the constitutionality of the Bituminous Coal Conservation Act of 1935. The act, by its terms, applied to every producer of bituminous coal in the United States. It levied upon the sale of bituminous coal an excise tax of 15 percent of the sale price, and then provided for a "draw-back" of 90 percent of this tax by each producer who would file with the Bituminous Coal Commission an acceptance of the Bituminous Coal Code. The act empowered the Coal Commission to formulate the Bituminous Coal Code, and to thereby establish prices and to make provisions against various types of unfair competition. The Bituminous Coal Code contained certain labor provisions giving employees the right to organize and bargain collectively, creating a labor board, and providing that wages and hours agreed upon between the employees and the producers of two-thirds of the annual tonnage should be binding upon all code members.

The act and the code were attacked as being beyond the commerce powers of the Federal Government. The Court held that they were.

It said that the 15 percent excise tax, with its "draw-back" provision, was a penalty and not a tax. It then entered into an extended survey of the authorities defining the Federal commerce power. The court commented in particular upon *Oliver Iron Mining Company* v. *Lord*, supra, wherein it was held that mining is not interstate commerce.

The Court in this opinion pointed out that "the same rule applies to the production of oil," citing *Champlin Refining Company* v. *Corporation Commission*, supra.

The Court compared the *Schechter case* with the facts before it. In the *Schechter case*, the Court said, the flow of commerce has ceased, and in the case cited therein the flow of commerce had not begun. Neither state of facts, according to the Court, justified the intervention of the National Government under its commerce power.

The Court further said:

"We have seen that the word 'commerce' is the equivalent of the phrase 'intercourse for the purposes of trade.' Plainly, the incidents leading up to and culminating in the mining of coal do not constitute such intercourse. The employment of men, the fixing of their wages, hours of labor, and working conditions, the bargaining in respect of these things—whether carried on separately or collectively—each and all constitute intercourse for the purposes of production, not of trade. The latter is a thing apart from the relation of employer and employee, which in all producing occupations is purely local in character. Extraction of coal from the mine is the aim and the completed result of local activities. Commerce in the coal mined is not brought into being by force of these activities, but by negotiations, agreements, and circumstances entirely apart from production. Mining brings the subject matter of commerce into existence. Commerce disposes of it."

The Court then uttered these words, which may indeed be prophetic should the Federal Government seek to take unto itself additional and unauthorized powers under the guise of the commerce clause:

"Every journey to a forbidden end begins with the first step; and the danger of such a step by the Federal Government in the direction of taking over the powers of the States is that the end of the journey may find the States so despoiled of their powers, or—what may amount to the same thing—so relieved of the responsibilities which possession of the powers necessarily enjoins, as to reduce them to little more than geographical subdivisions of the national domain. It is safe to say that if, when the Constitution was under consideration, it had been thought that any such danger lurked behind its plain words, it would never have been ratified."

We come now to that group of cases sometimes referred to as the decisions since 1937. The first and outstanding of these decisions is *National Labor Relations Board* v. *Jones & Laughlin Steel Corporation* ((1937) 301 U. S. 1, 81 L. Ed. 893). The general provisions of the National Labor Relations Act are so well understood as to need no delineation here. In the *Jones & Laughlin case*, the Labor Board found that the steel company had violated the Labor Act by engaging in unfair labor practices affecting commerce. The steel company denied that the Labor Board had authority under the act to deal with the conditions of employment at its mills located in Pittsburgh and Aliquippa, Pa., asserting that these mills were not engaging in transactions in interstate commerce. Preparatory to a consideration of this question, the Court said:

"The authority of the Federal Government may not be pushed to such an extreme as to destroy the distinction, which the commerce clause itself establishes, between commerce 'among the several States' and the internal concerns of a State. That distinction between what is national and what is local in the activities of commerce is vital to the maintenance of our Federal system."

The court then pointed out that under the language of the Wagner Act the power of the Labor Board extends only to persons engaging in labor practices affecting commerce:

"The grant of authority to the Board does not purport to extend to the relationship between all industrial employees and employers. Its terms do not impose collective bargaining upon all industry regardless of effects upon interstate or foreign commerce. It purports to reach only what may be deemed to burden or obstruct that commerce and, thus qualified, it must be construed as contemplating the exercise of control within constitutional bounds."

The court then reviewed the vast interstate operations of the steel company and held that the Labor Board had authority to deal with labor practices of the steel company with respect to its employees engaged in the integrated interstate business of the company.

The court commented upon the *Schechter Poultry Corporation case*, and, by way of distinguishing it, said:

"In the *A. L. A. Schechter Poultry Corporation case*, we found that the effect there was so remote as to be beyond the Federal power. To find 'immediacy or directness' there was to find it 'almost everywhere,' a result inconsistent with the maintenance of our Federal system."

Much profit can be derived from the *Jones & Laughlin case* in our present inquiry While holding the Jones & Laughlin Steel Co., with its far-reaching integrated operations, subject to the commerce power, the court carefully pointed out the limitations of this power and the fact that it cannot be extended to intrastate activities having only an indirect effect upon interstate commerce. The Court clearly based its decision on the extensive interstate operations of the Steel Co. One can properly conclude from the decision that an attempt by the Government to regulate labor conditions in all steel companies, including those whose operations are as plainly intrastate as were the operations of the Schechter Poultry Corporation, would be disapproved by the Court. It must follow, then, that the Court would similarly disapprove the present proposal to regulate all oil producers, including small producers whose operations are limited to one field, or to a single State. In the words of the Court in the *Jones & Laughlin* decision, "to find immediacy or directness there" would be "to find it almost everywhere."

In this same opinion, the court held the Wagner Act applicable to the operations of the Fruehauf Trailer Co., upon a showing that the company operated a large factory in Detroit, maintained 31 branch sales offices in 12 different States, and had distributors and dealers in the principal cities of the country, and upon the further showing that it purchased raw materials for its operations from various points outside the State of Michigan.

The court, similarly, in the same opinion, disposed of the contention of the Friedman-Harry Marks Clothing Co. that the Labor Board had no authority over it, upon a showing that although the clothing company operated only one plant at Richmond, Va., nearly all of its raw materials were shipped in from outside the State and over 80 percent of its product was exported from the State.

Virginia Railway Company v. *System Federation No. 40* (1937) 300 U. S. 515, 81 L. Ed. 789) and *Washington V. & M. Coach Company* v. *National Labor Relations Board* (1937) 301 U. S. 142, 81 L. Ed. 965) simply and properly hold that the Labor Act is applicable to transportation companies engaged in interstate commerce.

The Associated Press v. *National Labor Relations Board* (1937) 301 U. S. 103, 81 L. Ed. 953) holds that the Labor Act is applicable to an employee working in the New York City office of the Associated Press, through which office passes a vast amount of interstate and foreign news.

Santa Cruz Fruit Packing Company v. *National Labor Relations Board* (1938) 303 U. S. 453, 82 L. Ed. 955) held that the Labor Board may concern itself with labor disputes in a company engaged in the business of packing fruits and vegetables and shipping a large part thereof outside the State.

Consolidated Edison Company v. *National Labor Relations Board* (1938) 305 U. S. 197, 83 L. Ed. 126) held that the Labor Board had authority over the Consolidated Edison Co., although the company generated and sold electricity only in New York City, inasmuch as the company purchased in interstate commerce vast amounts of coal, etc., which were consumed by it in the generation of electric energy, and for the further reason that it furnished large amounts of electricity to interstate railroads, docks, piers, telegraph companies, airports, etc. The court pointed out that an interruption in the service furnished by the Edison Co. would have not only a direct, but a catastrophic effect upon the great volume of interstate commerce moving through the city of New York.

In Currin v. *Wallace* ((1939) 306 U. S. 1, 83 L. Ed. 441) the court considered the constitutionality of the Tobacco Inspection Act.

The act found that tobacco, in passing through the tobacco warehouses in the stream of interstate commerce, was not uniformly graded and inspected. It authorized the Secretary of Agriculture to establish standards by which the type, grade, and other characteristics of the tobacco could be determined, and it provided for compulsory labeling, by warehouses engaged in interstate commerce, in accordance with these standards. It was asserted that the National Government exceeded its powers under this act. The court found that the warehouse markets affected by the act predominantly were engaged in selling tobacco in interstate commerce, and held that Congress had the right to regulate this commerce.

One can make no constitutional criticism of this decision, because the tobacco had plainly entered the stream of commerce and was, therefore, subject to Federal regulation.

The second case dealing with the tobacco-marketing industry is *Mulford* v. *Smith* ((1939) 307 U. S. 38, 83 L. Ed. 1092). Here, the appellants attacked as unconstitutional the Agricultural Adjustment Act of 1938. This act, insofar as it applied to tobacco, found that the marketing of tobacco is a basic industry directly affecting interstate commerce, and that marketing conditions were in such a chaotic state as to burden interstate commerce. The act provides for the determination each year by the Secretary of Agriculture of a "reserve supply level" of tobacco. Should it appear that this reserve supply level for any year is about to be exceeded, the Secretary is authorized to conduct a referendum to ascertain whether the producers favor or oppose the imposition of a quota. If less than one-third oppose the imposition of a quota, a quota is fixed by the Secretary. This quota is apportioned among the States, and is further reapportioned down to each tobacco grower upon an equitable basis. The act provides that if tobacco grown in excess of the quota for a particular farm is marketed through a warehouseman, the latter must pay to the Secretary of Agriculture a penalty equal to 50 percent of the market price of such excess tobacco. This penalty a warehouseman is authorized to deduct from the price paid the producer. The court in its opinion held the act constitutional, and a valid exercise of the commerce power. In so doing, it very carefully pointed out the limitations of the act in saying:

"*The statute does not purport to control production.*—It sets no limit upon the acreage which may be planted or produced and imposes no penalty for the planting and producing of tobacco in excess of the marketing quota. It purports to be solely a regulation of interstate commerce, which it reaches and effects at the throat where tobacco enters the stream of commerce—the marketing warehouse."

In other words, the court upheld the act because it refrained from limiting the production of tobacco, an intrastate activity, and concerned itself only with regulating the flow of tobacco through the warehouses in the stream of interstate commerce. The language of the court we believe plainly shows that any attempt to regulate the details of production, whether it be tobacco or crude oil, is beyond the power of Congress.

CONCLUSION

It will be observed that the foregoing discussion deals with the constitutionality of the proposed legislation only from the standpoint of the power of Congress to enact such measure on the theory of providing for the national defense and the regulation of commerce between the States. The other questions of whether Congress has in fact under the proposed bill delegated unconstitutional legislative authority to others, which we frankly believe is a serious objection to the bill, or whether the bill on its face is a taking of property without compensation in violation of and contrary to the fourteenth amendment to the Federal Constitution for the reason that the bill makes no provision for prorating the production available for supplying the market demand and fails to provide for a ratable taking of oil from producers within the same common source of supply, or fails to provide for any protection of correlative rights of individual owners, are all questions which have been omitted from this brief because it is believed that the patent lack of Federal authority to enact such measure within constitutional limitations renders unnecessary a consideration of these questions.

The constitutional validity of the proposed legislation must be predicated upon the authority of the Federal Government to manage, control, and regulate the production of oil and gas and the means and methods to be employed in the production thereof. The policies set forth in the bill, are first, to provide for the national defense, and second, to regulate commerce between the States. We believe the authorities cited and discussed conclusively demonstrate that Congress has no general or unlimited constitutional right with regard to maintaining the national defense. These powers are specifically set forth in the Constitution. As suggested by Hon. Charles Evans Hughes in the brief presented to the Oil Conservation Board in 1926 and cited herein, petroleum without question is an essential commodity in the maintenance of the Army and Navy, and likewise the food supplies, shoes and other equipment, and all of the metals and other material used in equipping and maintaining the Army and Navy, are essential. Congress has full power and authority to secure these essential commodities for the maintenance of the Army and Navy by the levying and collecting of taxes, duties, imposts and excises as provided by the Constitution.

To give to article 1, section 8 clause 1 of the Constitution the all-inclusive unlimited power to provide for the common defense and general welfare of the United States would be to make the Government of the United States one of general powers instead of one of expressed powers and would reduce the other provisions of the Constitution to mere verbage. If article 1, section 8, clause 1 is to be so interpreted, then the only necessary provision in the Constitution of the United States is the general welfare clause.

As to the second declaration of policy contained in the bill with respect to regulating commerce, we assert that the control of production of oil and gas and the methods by which such production is obtained from the earth is in no wise a regulation of commerce between the States. Oil and gas are found beneath the surface of the earth. The land under which oil and gas are found, outside of the public lands, is a part of the dominion of the States over which the States have sovereign jurisdiction and control. The activities incident to producing oil and gas or the methods employed in bringing the production to the surface is not interstate commerce. As early as 1911 the Supreme Court of the United States in the case of *West* v. *Kansas Natural Gas Co.* (211 U. S. 229, 55 L. Ed. 716), held that the production of gas was intrastate business subject to the sovereign jurisdiction of the State. And then again in the *Champlain case supra*, the Supreme Court of the United States, with the same force and vigor of its previous opinions, denied the contention that the production of oil or the means or methods employed with respect thereto was interstate commerce, but on the contrary held that such activity was indelibly stamped by character and nature as intrastate activity.

We earnestly urge that this honorable committee give the most serious consideration to the principles of constitutional government discussed in the opinions cited herein. When this has been done we are firm in our belief that the committee will reach the inescapable conclusion that the proposed bill is beyond the constitutional power of Congress.

Respectfully submitted.

Tom Anglin,
Attorney at Law.
W. J. Holloway,
Attorney at Law.

(The letter in re broadcasts above referred to follows:)

Interior Department "Explains" How Ebenezer's Ghost Got on the Radio

Following is the text of a letter, received from B. C. Schoenfeld, chief script writer of the Interior Department, explaining the "invention" of the character "Ebenezer Floyd", pictured in a recent departmental broadcast as a Pennsylvania oil producer who went to Washington in 1907, seeking Federal oil legislation. (See National Petroleum News, January 17, 1940, p. 11, for an account of the "Ebenezer Floyd" broadcast).

In regard to the Floyd dramatization of the What Price America program No. 46:

My purpose was to show that in the early part of the twentieth century there were individuals who foresaw, years ahead of their time, the need for oil conservation legislation.

To do this, I invented Floyd, the small oil producer.

I placed the scene in 1907 for two reasons: One, 1907 was the year that President Theodore Roosevelt's Conservation Conference was being planned for the following spring, and two: I wished to show that the first oil conservation legislation which came into being in 1915 was the result of public opinion.

The difference in attitude between Floyd and the producers, pages 14–15, was based on the following research:

Summary of Raymond S. Blatchley; 1912. Technical Paper No. 45 to Bureau of Mines.

"The enforcement of drastic legislation to meet the problem of conserving natural gas and oil has proved difficult. * * * Investigation and education are the best solution of the problem. This must be done in the fields and with personal cooperation and contact with the oil and gas men. These operators must be shown that it is to their profit to conserve oil and gas. * * * It should be made compulsory to use proper methods for conserving the gas found above the more important oil and gas-bearing horizons. * * * As has been pointed out, a large amount of the upper gas has been and is being wasted, and immense quantities of gas have been prematurely invaded by water, through failure to use the best methods in drilling, in casing wells, and through wasteful exploitation."

Blatchley is not the only one in this period, from 1907 to 1912, to verify the divergent attitudes of Floyd and the other producers. J. C. McDowell, at the fifth annual meeting of the National Gas Association of America in 1910, basing his speech on his personal experiences prior to 1910, states:

"The oil producer in his insane greed for riches, fortified by the long established custom, is the principal transgressor. Having no immediate market for the gas, he allows it to exhaust itself in the air until the pressure is reduced to a point where he may resume drilling. The oil producer, if in need of power, uses what gas he requires for power purposes and turns the balance loose, looking on anything surplus gas as a nuisance to be gotten rid of, claiming the right to do as he pleases with his own product, and in the absence of legislation on the subject, he seems to be acting within his rights."

"The waste of natural gas in West Virginia has been exceeded only by that of our sister State, Pennsylvania."

That my fictional Mr. Floyd was not alone in his attempt to warn both the industry and our lawmakers of the need for oil conservation measures is brought out by this statement in the same speech of Mr. White:

"For 10 years I have appealed in my official capacity as State geologist to the Legislature of West Virginia, to put some check on this frightful waste."

And there were others in this period beside actual Mr. White and fictional Mr. Floyd who were attempting to warn America; I quote from United States Oil Policy by John Ise, 1926, Yale Press:

"In January 1904, C. T. Deane wrote very cheerfully, 'The permanence of the supply need not trouble this generation.' *Some,* however, saw that California oil men were drilling too many wells, *and in other parts of the country, there were many signs of an increasing interest in oil conservation.*" [Italics, mine.]

And again, on page 7 of Technical Paper 38 of the United States Bureau of Mines, Arnold and Clapp state:

"The waste of natural gas today (1912) *has drawn the attention of the entire country.*" And on page 13, "A few broadminded men including *operators* and geologists, have sounded a warning from time to time * * * *as long ago* as 1899, Dr. Orton had advocated conservation laws for gas and oil."

Mr. I. C. White, State geologist of West Virginia, at the conference of governors in the United States called by Theodore Roosevelt at the White House on May 13, 1908, says in his speech:

"The great mistake of the oil producing interests has been in not properly apprehending the enormous fuel value of the natural gas they were destroying, and in not demanding legislation for its protection instead of successfully throttling and preventing in every State of the Union—except one—Indiana."

These statements by Mr. White and Mr. McDowell seem to me to substantiate the attitude of the progesssive oil operator at this time, and accordingly, these beliefs were put into the mouth of Floyd, as were the opposing beliefs put into the mouths of the other producers.

As to the reason why I chose Pennsylvania, I again quote from the same speech of Mr. White in 1910:

Concerning Floyd's warning of depletion of oil: Van Hise, in his Conservation of Natural Resources in the United States:

"In 1907, 35,000,000,000 barrels of petroleum, or between one-quarter to one-fifteenth of the amount taken out of the ground, was used for power. * * * But looking at the matter from any point of view, in the not distant future, there is likely to be a severe shortage in petroleum and especially in material for lubricating purposes."

The specific cause of Floyd's complaint I based on Technical Paper 51, page 23, of the Bureau of Mines, for the year 1913, in which L. G. Huntley states:

"In a great many fields the territory is divided among a number of operators, each working against the other to extract the most oil possible before his neighbor has a chance to take it. This usually results in the holders of small leases drilling as many wells as possible close to the boundary line, forcing the lessees of surrounding land to drill well for well in order to protect their own property."

I feel that the apocryphal Mr. Floyd represents the type of far-seeing oil producer and conservationist of that period, as borne out by the research given above. I feel also that the point of view taken by Floyd and the conditions he was attacking, were also validly chosen, and based on documentary authority.

Yours very truly,

BERNARD C. SCHOENFELD,
Chief Script Writer, Radio Section.

(The radio scripts above referred to are as follows:)

[Program No. 46]

WHAT PRICE AMERICA?

NARRATOR (to himself). How strange—how very strange—I could have sworn I heard * * * and yet only last week I told my son that there weren't such things as—[to the radio audience]. You—you listening—can you hear those men speaking to us?

[Pause.]

You can't? Oh dear, it seems as though they've chosen me as stooge. [To the radio audience.] I had come to talk to you who listen in on this weekly half-hour which the Department of the Interior and the Columbia Broadcasting System sponsor. You know—this series, What Price America. You would have had a jolly and informative half hour, if I do say so myself. But now [to the unheard visitors]. Well, my friendly ghosts, why have you left the Elysian Fields and cloaked in nothing save your winding sheets come back to me on this brisk December afternoon? What's that? Oh, I see. [To the audience.] It seems these spirit friends of mine are worried—are worried as to whether this democracy of ours, severely tested, can prove its ability to function in a modern world of——

NEWSBOY. Extra! Extra! Submarines sink two more battleships!

DICTATOR (this gibberish is done with all oratorical tricks). And if it isn't which it is will be rising above like we must no free speech allowed so that if out of the destiny that is for to be coming with such I would not there is only one blood and that is ours and the past and the future and tomorrow and tomorrow and yesterday and today so be it and you take your orders from me.

VOICES. War! War! War!

DEMAGOGUE (smug and oily). Some call me bigoted. But no one loves his fellow man more than I. Of course, I have proof that they always cause riots and make all the money and throw the people out of work.

SENATOR. And if the Senator who has the floor thinks that by such legislation he can——

VOICE. Censor that! Censor that! Censor that!

(Music up and out.)

NARRATOR. So, my ghostly gentlemen, in such a world as this you're worried because of the test to which our United States is being put? But why? What's that? These ghosts think of our country as a beautiful mansion that must be made safe and inviolate from waste and unwise use of what lies in that mansion.

(Music. Sneak under.)

(Sound. Knock on door—opening of door.)

HOST (genial, but excessively casual and irresponsible). Ah, come in, my friend. Come in. Welcome to my house.

(Sound. Door closes.)

VISITOR. What a beautiful mansion this is!

HOST (casually). Glad you like it. My people built it 150 years ago. It's been handed down from generation to generation.

VISITOR. Priceless heirlooms—that furniture——

HOST. Oh, yes; priceless.

VISITOR. Who takes care of it?

HOST. We have servants whom we tell what to do. I and my sister discuss problems of this house together. Very democratic, my sister and I. No one tells us what to do or what not to do. We believe in democracy. [Most casually.] Hand me that axe, please.

VISITOR (bewildered). Why—er—sure.

(Sound. Chopping up of a piece of furniture.)

VISITOR. Great Scott! You've ruined that chair!

HOST. Course I have.

VISITOR. But that beautiful——

HOST. I've a right to ruin it, haven't I?

VISITOR. Why, of course, but——

HOST. No one can tell me what to do with my own possessions in my own home.

VISITOR. But that chair can never be replaced!

HOST. Plenty of other chairs in this house.

VISITOR. But have you no pride of heritage—your children, when they grow up—that chair would have meant so much to them.

HOST. Let 'em get their own chairs. How do you like that rug?

VISITOR. It–s beautiful—and very old.

MAN. Very old. No other rug like it in the world. Burns nicely, too. Look—all I have to do is drop a lighted cigar—like this——

VISITOR (aghast). Stop! There'll be a hole in that rug in a——

MAN. Doesn't it burn well?

VISITOR (groans). That rug was irreplaceable! You shouldn't have done it.

MAN. Really, you mustn't interfere. I can do with my rug as I please. This is a democracy, isn't it?

(Music: Up and under.)

VISITOR. What a beautiful country! Rich and prosperous!

HOST. (Genial, but excessively casual and irresponsible). Glad you like these United States. Our pioneers founded it 150 years ago. Been handed down generation to generation.

VISITOR. Priceless heirlooms—those forests—those mines—those oil fields.

HOST. Oh, yes; priceless.

VISITOR. Who takes care of them?

HOST. We have public servants whom we tell what to do. I and the other citizens own these ntaural resources together. Very democratic, all of us. No dictator. No one to tell us what to do with our forests, with our mines. Democracy, you know—hand me that axe, please.

VISITOR. Why—er—sure.

(Sound: Chopping down of trees.)

VISITOR. Good heavens! You've cut down your forests!

HOST. So I have.

VISITOR. But——

HOST. We've a right to, haven't we?

VISITOR. Why, yes—but——

HOST. No one can tell us what to do in our country.

VISITOR. But those forests didn't have to be cut down. It was wasteful and ignorant!

HOST. Oh, my dear man, you're boring me. There are plenty of other forests in this country.

VISITOR. But haven't you pride of heritage? Your children—when they grow up——

HOST. Let them worry about it—how do you like these oil wells in Texas, in Arkansas, in California?

VISITOR. Wonderful supply!

HOST. Yes. They look very nice when they all shoot up into the air at once. Like this—

(Sound: Gushing of many wells.)

VISITOR (aghast). Stop it! You're wasting all the oil in——

HOST. Makes a pretty sound. Brings in the money.

VISITOR. But those wells can't be used again! There was no need for such negligence and waste!

HOST. Really, you mustn't interfere. We can do what we like with our natural resources. This is a democracy, isn't it?

(Music: Up and out.)

NARRATOR (dryly). To say the least, the point is fairly obvious. But you worried apparitions who come back to haunt us with reproach. Who are you? Who? Speak up a little louder, gentlemen, and speak to these folks who listen in, as well as to me. Come in! A little louder! But leave your clanking chains behind you.

(Music: Sneak under—not eerie, but fervent and American.)

LANGFORD. My name was Nathaniel Langford.

FLOYD. My name was Ebenezer Floyd.

POWELL. I was Maj. John Wesley Powell.

PETTIGREW. I was Senator Richard Franklin Pettigrew. Do you think our names mean very much to the folks listening to us, Langford?

LANGFORD. By the time we're done, they'll know who we were.

NARRATOR. We are very honored, gentlemen, and all of that but——

LANGFORD. Listen, young man, if we hadn't shown up, you were going to shoot off your mouth about conservation, weren't you?

NARRATOR. Yes, Mr. Langford, I——

POWELL. Well, we know a lot more about conservation than you do. And we're worried about it as we told you.

FLOYD. Worried as all get-out.

PETTIGREW. We've been watching you folks.

LANGFORD. You're making a lot of mistakes.

Powell. Especially in times like these, you shouldn't be making mistakes——

Pettigrew. It's an ugly world today, but here you're safe, sitting in this beautiful mansion called the United States and raising——

Narrator (apprehensively). Please, Senator Pettigrew, the radio does not permit——

Pettigrew. Raising cain with your possessions—your natural resources.

Powell. That's telling them, Senator. Great Scott, how we tried, we four men, to preserve those resources for you people—way back. Remember, Langford?

Langford. Seems like yesterday. Just how long ago was it?

Narrator. I can tell you gentlemen, since time has lost its meaning to you. Mr. Langford began his work in 1870.

Langford (a soft-spoken gentleman). Yes; I and 18 others went out to Yellowstone when nobody knew there was such a place. Indians—wild animals—real wilderness. We marvelled at the wonders there. The geysers and mud volcanos and the canyon and the great falls and the herds of buffalo and the mountain peaks and forests—there those wonders were for us to do with as we wished. We sat around one night by the campfire. A lot of us talked about buying up the land from the Government, making profit out of it, owning this Yellowstone ourselves—oh, we could have done it perfectly legally—but one of the party, named Hedges, got good and mad. He stood up in that forest silhouetted against that campfire and gave us a bawling-out as though we were kids.

(Music: Sneak under.)

Hedges. Gentlemen, for a month we've been out of sight of civilization. We've forgotten greed and money and the trappings of society. Never before in our lives have we felt the pettiness of man in the presence of the Almighty as we do looking at the canyon of the Yellowstone. Day after day we've seen miracles of nature, mountains and hot springs, rivers and geysers, that were here before a human being existed on this continent. We should be very humble, gentlemen, before the sights that we have witnessed here in Yellowstone. We should realize that those wonders were not put here for us to exploit or greedily possess. It seems to me that everything we have seen should not belong to any one group like ourselves but to all the people.

(Music: Out.)

Powell. I bet that made you red around the collar, Langford.

Langford. Certainly did. So we all agreed to urge Congress to set that region apart as a public park—3,500 square miles. Took 2 years of hard work and a lot of faith, but we won. And that was the beginning of our national-park system.

Powell. Guess we all worked hard. Yes, sir; let me tell you, young man, whatever your name is——

Narrator. Who, me? Oh, I'm just the narrator on this program——

Pettigrew. Well, young man, you heard Mr. Langford's story.

Narrator. Yes; I did, Senator Pettigrew. But——

Pettigrew. Langford was looking ahead, he and those men who went out there to Yellowstone and started the national-park system.

Narrator. We thank you ghosts for reminding us of these things. But why are you so worried?

Powell. Tell the young squirt why we're worried, Langford.

Langford. Because we have been watching all of you right at your elbow. You've got 25 national parks. They belong to everyone of you now. Well, what do you do with them? You drop matches in the forests, you fish out of season. You throw sandwich wrappers and cigarette cartons into the geysers at Yellowstone and the falls at Yosemite. What do you think we all worked so hard for, if it weren't for you and your children? We did our part for you. Are you going to shirk yours? You make me confounded sore.

Narrator. It wasn't I who called you back, Mr. Langford. You came of your own free will.

Langford. We couldn't very well watch you folks misusing your possessions——

Pettigrew. Young man?

Narrator. Yes, Senator Pettigrew?

Pettigrew (his voice is learned, but he is hard-bitten and virile). What the devil do you think I was willing to stake my reputation for. Every hear of me before?

Narrator. Why—er——

Pettigrew. No; you've forgotten—all of you. Well, I was the first Senator from South Dakota. Those were the days—in the 80's—when the robber barons reigned in their glory.

Powell. A handful of unscrupulous traitors who for a potful of gold would sell their country. Great Scott, how you fought them, Pettigrew.

PETTIGREW. Those villains wanted to get their hands on all the finest timber in the West. They would stop at nothing. How they pilloried [fade] me in the Senate.

(Pause.)

SENATOR. And I ask my fellow Senators to see Richard Franklin Pettigrew for what he is—a danger to our country, a demagogue, a malicious liar who tries to destroy the reputation of great and good men. I beg this Chamber to listen to an editorial in this morning's paper: I quote, "It would be good if the Senator from South Dakota were to go on a long hunting trip into the wilds of his State and get lost. This country has no use for a radical with half-baked notions and malicious accusations."—unquote. If I had the time, gentlemen, I could read such editorials from many newspapers from all over the country. As for me I wish to state in public that Pettigrew is not worthy of the name of Senator and I will continue to denounce him so long as he continues his violent attacks on men who have made this country what it is today.

(Sound: Applause.)

PETTIGREW. Mr. President.

PRESIDENT. I recognize Senator Pettigrew from South Dakota.

PETTIGREW. I have been——

(Sound: Booing drowns him out.)

(Sound: Gavel.)

PRESIDENT. I remind the visitors in this Chamber that they are guests of the Senate and should conduct themselves accordingly.

(Sound: Dies down.)

PRESIDENT. Continue, Senator Pettigrew.

PETTIGREW. I have been sitting here for 2 days listening to an analysis of myself by my distinguished fellow Senators. There is not a name used by guttersnipes and barflies that have not been used to describe me. My character I will not seek to defend. But the fact that I have brought to the attention of the Nation, I shall continue to defend. Out in the West lies a wilderness of virgin timber which belongs to the people of the United States. A few men wish to grab up these forests for themsveles, to chop them down, to desecreate them. It is not my intention to let them do this.

SENATOR. Will Senator Pettigrew yield for a question?

PETTIGREW. What is your question, sir?

SENATOR. Do I understand that you favor setting aside these forests under the jurisdiction of the Federal Government? Do I understand that you are against private ownership?

PETTIGREW: Exactly.

SENATOR. That is the most undemocratic proposal that any American has ever uttered in this Chamber.

PETTIGREW. On the contrary, it is the very essence of democracy. For what is democracy, what is government, if it is not the people? I foresee a day when our natural resources shall be used for the good of all the people. In a few days I shall present a bill to put a hundred and fifty million acres of timber lands into national timber reserves.

(Sound: Booing.)

(Sound: Gavel.)

PETTIGREW. No, Mr. President, let them boo me. Let them crucify me. They cannot crucify the truth! Democracy will disappear from the United States when our citizens do not feel pride of possession toward those assets which have made America what she is—her natural resources!

(Music: Up and out.)

NARRATOR. I had no idea, Senator Pettigrew—I'm sure the radio audience had no idea—your sacrifices——

PETTIGREW. Now you see why I am interested in what's happening today.

MARRATOR. Even though you lost, Senator Pettigrew?

PETTIGREW. Lost? What are you talking about, young man? I won hands down in spite of everything. Just as Langford here helped create the national-park system, so I, if I may say so, created our national-forest reserves.

POWELL. That's why Pettigrew got worried and came back today.

NARRATOR. But, Senator Pettigrew——

PETTIGREW. Look here, son, there's a war in Europe. You're going to hear an awful lot about Europe needing our natural resources. People may try to raid our resources. There's going to be a few of our citizens who'll want to take advantage of the war and make enormous profits at your expense. Well, are you going to let them? Are you going to let them go into our common timber reserves that I worked so hard to preserve for you? And cut the trees down under the guise of wartime necessity while we remain a peaceful country?

That's what worries me! Are you going to sit by and watch legislation that's kept your natural resources intact, wrecked because you aren't proud enough and patriotic enough to speak your mind to your public servants? That's our oil, our fish, our timber, our grazing lands? Well? Well?

POWELL. Stop scaring the audience, Pettigrew. It's bad enough for us to come back like this without yelling at them. Give Floyd a chance to speak.

FLOYD (a timid, shy, simple man). Oh, shucks; don't mind me.

PETTIGREW. Now come on, Floyd. There's no sense in being a gentle ghost. Speak your piece.

FLOYD. Well, you won't find my name in any history books like you will Pettigrew's, Langford's, and Powell's. Nobody knows of me. All I did was make a trip to Congress one day in 1907. That's all.

POWELL. Go on and tell them about it.

FLOYD. Well, I was a small oil producer in Pennsylvania. Began to notice what was happenin'. Too many wells bein' drilled. Too much oil bein' left in the ground 'cause the gas was being wasted. I kept seeing overproduction day after day. Why, land sakes, it's a wonder we made any money at all. So one day I got hold of two of the big producers and [fade] talked to them. [Pause.]

FLOYD. I know I'm not the size producer that you two fellows are, but if you let me explain a few facts——

PRODUCER. We're very busy, Floyd. So don't waste our time.

FLOYD. You seem to think that oil and gas will keep comin' out of the ground until kingdom come. That ain't so. We're all makin' a big mistake. You use a well for a while, and when you don't get enough out of it, you leave it and drill a new one. That's not right, leavin' oil in the ground so it must be wasted. If one man has four wells, his neighbor drills five and that's the way it goes.

SECOND PRODUCER. Well, what about it?

FLOYD. Well, I'd like to suggest that we cut down our oil production until we use up our surplus. If we don't, we're goin' to all be ruined.

PRODUCER. How you ever came to be an oil producer, Floyd, I'll never know. You ought to be behind a plow.

SECOND PRODUCER. We've no time for——

FLOYD. So help me, gentlemen, if we don't conserve our oil supply, the day is goin' to come when we won't have any oil to sell, and our grandchildren——

SECOND PRODUCER. Mr. Floyd, it seems you're under the impression that we're in this business for fun. But we're not. We're in it to make as much out of it as we can. And I'm afraid we can't be worrying about our grandchildren.

FLOYD. You can't see an inch farther than your nose, all of you!

PRODUCER. Good day, Mr. Floyd!

FLOYD. I'm not the kind of man who gets sore easily, but I'm sure riled now! There you two sit—wise as owls in a tree and just about as blind. 'Cept owls see at night and you can't see any time. Land sakes, ain't you got no patriotism at all?

PRODUCER (angrily). Oh, get out, you hick!

(Music. Up and under.)

FLOYD. Maybe I wasn't dry yet behind the ears. Maybe I was just a rube oil producer, and the other fellows were wise and powerful. But I took the train that night for Washington and the next morning I sat with the Congressman from my district.

(Music. Out.)

FLOYD. I tried to tell him how no sooner did one oil well start to produce than three more sprang up—that meant waste—overproduction. I told him to introduce legislation that would stop the waste and conserve the oil. And he told me to go back home and let somebody who knows something about the subject do the worrying.

Well, there I was, back in 1907, just an ordinary man, no money, no title, no position, trying to fight somethin' that I saw comin' sure as fate. I went back to Pennsylvania. When I got off the train it was rainin'. So I jest caught cold and died a week later. Never did much good.

POWELL. We think you did fine, Floyd, don't we, Langford?

LANGFORD. Certainly. If all the ordinary little people in the country took your example, things would be better.

FLOYD. Well, that's why—when you and the others said you were comin' back to give a piece of your mind to this radio talker and the radio audience, I said I'd come along. 'Cause I'm mighty worried. Why, I can look ahead and see when we will have no oil in this country! These are the days to watch out and see that intelligent methods are used in gettin' the oil out of the ground. Jumping Jehosophat, what have you got a Congress for? What good is legislation unless you use it to conserve your oil?

NARRATOR. Well, I must say, you gentlemen have returned to us with chips on your shouders.

POWELL. Young man?

NARRATOR. Yes, Major Powell?

POWELL (fierce, strong, a fire-eater). Nobody, ghost or no ghost, likes to see the efforts of a lifetime come to no good. Look at me. I was always a fighter. Lost an arm at Shiloh in the Civil War. Fought all kinds of enemies. Always enjoyed a scrap. Especially when I fought waste and ignorance of our country's resources. Most people don't remember me for what I am proudest of. For instance you, young man, what do you remember me for?

NARRATOR. Didn't you go down the Colorado River in a boat with a party of men—the first time it ever was done?

POWELL. There you are, what did I tell you? Yes; I went down the Colorado in a boat. That's all most people remember. I grant you it was dangerous. Almost lost my life a half dozen times. Explored the lower Grand Canyon area for the first time. And that wasn't any sissy's work. But I'm prouder of what I did to warn the people in my country how to conserve their natural resources. I was one of the first back in 1878 to suggest irrigating the dry land in the West, to build reservoirs and dams. It was I who foresaw that too many cattle were grazing on too little land in the West and that there would have to be legislation to forbid overgrazing. Great Scott, what fights I had to put common sense into the heads of the people I talked to! And what good has it done?

NARRATOR (piqued). Now see here, gentlemen, it's all right for you to come sliding in on the airways and scaring me out of my wits—there's no law against spirits broadcasting, I suppose, so I don't mind—but when all of you light into us and give us Hail Columbia and tell us that we're not carrying on the ideals that you stood for—well, that's just going a little too far! Now let me tell you spooks a thing or two! Let's grant that we have to be more vigilant, better educated, and less wasteful in our conservation problems. But when you try to tell us that we're a bunch of blind fools that haven't done anything about conservation, you're just barking up the wrong tree! Just let me show you ghostly guests what we've been doing in the last few years!

(Music: Stirring . . . under throughout.)

VOICE. The Bureau of Mines!

SECOND VOICE. Studies of fuel economy! Investigations of explosions! Petroleum refining! Prevention of industrial diseases! Safety measures!

VOICE. The Geological Survey!

THIRD VOICE. Mapping the depth and shore line of rivers, the mileage and deposits of rivers! Investigating the distribution and geological relation of helium! Seeking and investigating deposits of metal-bearing ores and of petroleum, gas, and coal!

VOICE. The Division of Grazing!

SECOND VOICE. The Taylor Grazing Act! The formation of grazing districts! The rehabilitation of grazing land! The building of waterholes, of trails!

VOICE. The National Park Service!

SECOND VOICE. The National Park rangers! To teach the young and to help the adults enjoy America, the beautiful! Establishment of wildlife sanctuaries! The preservation for all time of wilderness areas! The establishment of 25 national parks and 80 national monuments! The conservation of the beauty and nobility of our past!

VOICE. The Office of Indian Affairs!

SECOND VOICE. The Indian Reorganization Act! Conservation of Indian timber and soil! The preservation of Indian language, art, and traditions! Education for the Indian! Conservation of human resources!

VOICE. The Bureau of Reclamation!

SECOND VOICE. The blossoming of desert through irrigation! The construction of mighty dams! The Yakima, the Huntley, the Sun River, the Kendrick, the Shoshone, and the Colorado-Big Thompson Projects! Shasta Dam! and Friant Dam! And Boulder Dam! And Grand Coulee! And the All-American Canal!

VOICE. The Bureau of Fisheries!

SECOND VOICE. Fighting pollution! The establishment of hatcheries! The regulation of fishing seasons! The building of fish ladders! The restocking of streams!

VOICE. The Bureau of Biological Survey!

SECOND VOICE. The establishment of bird and game reservations! The study of food habits and migration! Conservation of fur resources! The education of the farmer, the sportsman, the nature lover!

VOICE. The Petroleum Conservation Division!

SECOND VOICE. The Connally Act! The State conservation laws! Reduction of gas waste!

VOICE. The General Land Office!

SECOND VOICE. The master map of the United States! The conservation of forest reserves on public land! The limitation of timber cutting!

VOICE. Bituminous Coal Division!

SECOND VOICE. The Bituminous Coal Act! Marketing rules and marketing regulations! A floor for prices to prevent destructive, wasteful, cutthroat competition!

(Music, up and out.)

NARRATOR. Well, what do you think now, my grisly friends? Are you still so pessimistic? Are you still as worried as you were? You, Major Powell, speak up.

POWELL. Why hasn't someone told me these things?

LANGFORD. Put it there, my boy! Gives me hope!

PETTIGREW. All my work—all my trials and tribulations—they were worth it.

FLOYD. Stop it, gentlemen!

POWELL. What do you mean, Floyd?

FLOYD. Don't be giving them swell heads. They mustn't stop just because they've been doing good work. No siree! There's still plenty of wasteful selfish mortals walking around these 48 States who can do a lot of harm unless all the folks get together and not only keep what they've got, but work to see that no one takes them away. These are easy times to have those things taken away. And when they begin to be taken away, that beautiful house we call the United States won't be standing up so strong. And that thing we call democracy won't be worth its salt. You've done well so far. Keep it up! You've got our blessings. Shucks, I ain't talked so much since yesterday when I had a fight with Dan Boone, on the best way to make a trail in the woods.

LANGFORD. Well, I'm not so worried now. Guess we can run along.

PETTIGREW. Goodbye, young man. And goodbye, America.

(Music, sneak under.)

(Pause.)

NARRATOR. Say, weren't they nice spirits to take all that time and trouble to come back and tell us where we stand. They certainly gave us a lot to think about. Don't you agree?

(Music, up and out.)

VOICE. Here is a special announcement—listen carefully.

SECOND VOICE. Every listener to this program may have a free publication packed full of interesting information about our country's natural wealth. It is a publication which every man, woman, and child in America should have. Send for your free copy now! Address "What Price America," Washington, D. C., and a free publication will be sent to you at once. Let me repeat, if you want this important booklet, just send your name and address—a post card will do—to "What Price America," Washington, D. C.

VOICE. Next week at this same time, the Department of the Interior in cooperation with the Columbia Network, presents the Forty-seventh program of the series of "What Price America." Listen next week to "What Price America."

(Music, up and out.)

ANNOUNCER. This episode of "What Price America" was written by Bernard C. Schoenfeld.

(Music—Ray Block.)

(Directed for Columbia by Earl Magill.)

[Program No. 36]

WHAT PRICE AMERICA?

ONLY THIRTEEN YEARS

(Sound: Speeding train, mounting in volume, and then as if roaring into the very room where listener is seated.)

NARRATOR (close on mike; deliberately, forcefully). Stop that train! [Louder] Stop that train! [Louder] Stop!

(Sound: Train shrieking to a sudden halt.)

NARRATOR (now calm and collected). Ladies and gentlemen, picture if you can an engineer of one of those crack oil-burning Diesel locomotives that week in and week out haul a human cargo from California to New York—New York to California. Picture such a man approaching me this minute, gesticulating widely, and definitely—and by that I mean "quite" upset. Here he is:

ENGINEER (coming on, excited). Say, what's the idea? Why did you stop my train? What's wrong?

NARRATOR (quietly). Plenty.

ENGINEER. Track loose?

NARRATOR (calmly). No.

ENGINEER. Bridge down?

NARRATOR. No.

ENGINEER. Accident ahead?

NARRATOR. No.

ENGINEER. Then what in the name of——[suddenly] Who are you?

NARRATOR. Me? [Simply] I represent the United States Department of the Interior and the Columbia Broadcasting System, sponsors of this radio series "What Price America."

ENGINEER (demanding explanation). What did you stop us for?

NARRATOR (simply) To tell you about oil.

ENGINEER (scarcely believing ears). To tell me about "oil."

NARRATOR (pleasantly). Yes.

ENGINEER. Man, are you crazy? Do you realize I've got over 100 people on that train? Bankers, housewives, salesmen, students—businessmen, lawyers, doctors, nurses—cousins, uncles, aunts and brothers——

NARRATOR (adding). Fathers, sisters, mothers, and others—if you want a rhyme. (Change) I know. I know.

ENGINEER. All depending upon me to carry them to a thousand different places to do a thousand different——

NARRATOR. Yes, yes; I know.

ENGINEER (angry) I've got to be in Kansas City at 9:30, Albuquerque at 4:20, Los Angeles at 11:50——

NARRATOR (interrupting). At 9:30—I've taken your train before.

ENGINEER. And you stop me to talk about—what is it you said—"oil?"

NARRATOR. Oil. Petroleum, if you want to be formal about it.

ENGINEER. You've got a nerve!

NARRATOR. Thank you. It takes all the nerve I have to stand up here and talk about the waste of an irreplaceable natural resource, the continued abundance of which most people take for granted.

ENGINEER. You're a fool!

NARRATOR. I'm prepared for such accusations, my friend.

ENGINEER. I can have you arrested.

NARRATOR. For telling you something you ought to know? For telling you that maybe in about 13 years—listen mister, listen well—maybe in 13 years at the rate we're using up our oil reserves, and with no new discoveries there won't be any trains making Kansas City at 9:30, Albuquerque at 4:20, Los Angeles at 11:50.

ENGINEER (curiosity aroused). What's that?

NARRATOR. You heard me. We're talking about "oil"—remember? Oil is a vital natural resource. It comes out of the ground—the ground of our Nation. It's necessary to you, to me, to everybody. Without it, virtually every wheel in the country stops turning. Do you want that to happen?

ENGINEER (belittling). I don't believe it ever will. Got an engine loaded with it now. Never have any trouble gettin' it.

NARRATOR. Nor does anyone else. You can get 5 gallons of gas for a Sunday automobile trip, 10 cents worth of gasoline to wash a dress—you can get a bottle of oil to feed a sewing machine—or bunkers full of fuel oil to send a ship across an Atlantic—but I tell you my friend, we've got to do things; men like you and me, if that's to go on.

ENGINEER (Unbelieving). Aw, who told you all this?

NARRATOR. Men who know. Men who know the oil industry, they told me. Men you've put in Washington to watch over your natural resources, they told me. Books, charts, and figures, and graphs, and they all say about the same thing. Let me tell you how it happened.

ENGINEER (impatiently). Got no time.

NARRATOR. But your job depends upon this, mister. Some day you'll wake up and you won't find oil waiting to feed that iron horse for you. You won't be able to move your train out of Chicago, unless——

ENGINEER. You're cracked, buddy, you're cracked. I could turn you in, but I feel sorry for you. I've got to make Kansas City at 9:30 and I got no time to be chewing fat with a crackpot. Now get off the tracks and stay off—it's private property, no trespassing. Somewhere between here and Kansas City I got to (fade) pick up 2 minutes . . .

[Silence.]

NARRATOR (quietly). He's gone. But you listening—I stopped him for you. I didn't expect he'd pay much attention to me. But you believe me don't you?

[Silence.]

NARRATOR (begins again terribly worried and sincere). Look—I'm speaking for the Department of the Interior, principal guardian of your natural wealth—it wouldn't let me say anything that wasn't so. [Sincerely] I'm telling you that our proven oil reserves—that is, the oil we know is in the ground—the oil we know is there—at the rate we're consuming it now, and with no further discoveries, will last us only about 13 years. Let's say 17 years, if you want to quibble. How old are you? You ladies don't have to answer out loud. Add 17 to whatever your age is. That's it. The danger will strike before then! [Conversationally] I wish I could talk individually with each and every one of you. I wish I could walk into the kitchen and say—[Change] How do you do, Mrs. Murphy?

Mrs. MURPHY. Top of the mornin' to ye, sir.

NARRATOR (surprised). What?

Mrs. MURPHY. I said, top of the mornin' to ye.

NARRATOR (hesitantly). Mrs.—Mrs. Murphy?

Mrs. MURPHY. Sure and who else would it be?

NARRATOR. Ye—es. (Change) How are you, Mrs. Murphy?

Mrs. MURPHY. Busy as a bee gettin' lunch ready, that's what I am. It'll be eggs, today.

NARRATOR. Cooking eggs on an oil stove. Mrs. Murphy, you use oil—you ought to be interested.

Mrs. MURPHY. Now don't be askin' me to buy anythin', young man.

NARRATOR. Believe me, I'm not trying to sell you a thing.

Mrs. MURPHY. Aw, be gone with ye. Then what are ye here for?

NARRATOR. I want to tell you something, Mrs. Murphy—it's very important to you.

Mrs. MURPHY (suddenly, frightened). Jimmie ain't hurt himself!

NARRATOR. No; Jimmie's all right. I wanted to tell you that a few years ago, we'd have had a serious oil shortage if the East Texas field hadn't come in.

Mrs. MURPHY. And why should ye bother me with that? Can't ye see I'm too busy to be makin' conversation?

NARRATOR (almost pleading). Mrs. Murphy—listen. This is something that concerns you. It's as close to you as—as your kitchen. The oil reserves of the United States will be used up long before the rest of the world uses up theirs.

Mrs. MURPHY. Well, I'll buy it, s'long as we have it.

NARRATOR. And after it's gone?

Mrs. MURPHY. That's for the Government to worry about, not a poor woman like me.

NARRATOR. But you're the government, Mrs. Murphy—You've a Congress that represents you. You can do something about the waste of oil—the waste in production, the waste in treating crude, the waste in storage, the waste in transportation, the waste through fire losses the——

Mrs. MURPHY (interrupting). Mister, I've got a family of nine children. I've got eggs to be cooked. If it's dinner you'll be likin' to stay for, I'll be glad to have ye, but I got no time to talk about waste. Here, hand me those matches. (Pause.)

(Sound: Match scratched and lighted.)

Mrs. MURPHY. There, the stove's burnin'. Now for the eggs——

(Sound: Eggs broken, fried, up and fade.)

(Pause, suddenly.)

(Sound: Noisy traffic on a busy street, hold under.)

FIRST DRIVER: Fill 'er up!

(Sound: Cash register.)

SECOND DRIVER. Fill 'er up!

(Sound: Cash register.)

THIRD DRIVER: Fill 'er up!

(Sound: Cash register.)

FIRST DRIVER: Fill 'er up!

(Sound: Cash register.)

NARRATOR (calling out). Say there, Mr. Fillerup.

ATTENDANT (coming on). Hi buddy. How many?

NARRATOR. None, until I've had a talk with you.

ATTENDANT. This is Saturday, buddy. People loadin' up with gas to go to a football game or away for a week end. I don't have much time to talk.

NARRATOR. Well, things have slowed down now. You've got time to answer a few questions haven't you?

ATTENDANT (reluctantly). O. K. Shoot.

NARRATOR. Where do you get your gas?

ATTENDANT. Company.

NARRATOR. Where does the company get its gas?

ATTENDANT. Texas, I guess. Never been there myself, but we got oil fields all over there.

NARRATOR. We?

ATTENDANT. Yeah, I'm tied in with the company.

NARRATOR. Then your job depends on oil, right?

ATTENDANT. Yep; oil's my bread and butter.

NARRATOR. How long do you think your job will last?

ATTENDANT. Long as I do O. K. I aim to be top guy in this district.

NARRATOR. I see. You know, of course, you won't always be able to "fillerup" when you're asked to—that it won't be many years before our proven oil supply will be gone?

ATTENDANT. You tryin' to scare me?

NARRATOR. No.

ATTENDANT. Why won't it be long?

NARRATOR. There are a lot of reasons.

ATTENDANT (challengingly). Gimmie one, mister, just one.

NARRATOR. Ever hear of the rule of capture?

ATTENDANT. Naw; what is it?

NARRATOR. Its based on our legal system. A man doesn't own the oil under the surface of his land until he captures it.

ATTENDANT. What's that got to do with me?

NARRATOR. Plenty. Supposing you struck oil on land you owned.

ATTENDANT. Now you're talking, mister! Would I go to town!

NARRATOR. Something like this would happen——

[Pause.]

(Sound. Oil well, in and up, then under.)

NEIGHBOR. Neighbor, oil don't know anything about private property rights. That oil pool you're drawin' from is under my land too. The land I own adjoinin' yours. You're drawing up oil from under my land even though that well's on your property.

ATTENDANT. Can't help that. Law says I can drill for oil on my land.

NEIGHBOR. Then I'm goin' to drill a well on mine before you get all that oil.

ATTENDANT. Go ahead.

(Sound. Two wells—or louder well—up and down.)

ATTENDANT. My well's doing all right.

NEIGHBOR. So's mine.

ATTENDANT. I better drill another well, get more oil out of that pool.

NEIGHBOR. Then I'll have to drill another well or you'll get more oil out of the pool that I do.

ATTENDANT. All's fair.

(Sound. Wells, up and down.)

ATTENDANT. There's my new well.

NEIGHBOR. And there's mine to match it.

ATTENDANT. Think I'll drill another.

NEIGHBOR. This is running into money, but I got to protect myself. I've got to keep up with you or you'll get my oil. One more, boys.

(Sound. Wells up and fade.)

NARRATOR. Six wells where one would do. There is a major cause of waste. In East Texas alone, 13,000 more wells were drilled than were needed. And that waste of oil, going on today, means goodbye to this vital resource . . . brings you so much closer to losing your job.

ATTENDANT. How do you get that way, mister?

NARRATOR. You're not dense. You get it. Producers are out to get the most oil in the least time. The gas energy that forces up the oil is wasted by drilling too many wells. Wasted energy means oil is left in the ground that would have been brought up if—if they took their time.

ATTENDANT. What do you mean, left in the ground?

NARRATOR. Even the use of the best methods never gets all the oil out of a reservoir. We seldom get more than 45 percent of what's there, less than half.

And when the best methods aren't used you're lucky if you get half of that. Maybe 20 percent where you could have had 45 or more.

ATTENDANT (surprised). My company does that?

NARRATOR. It's general practice.

ATTENDANT. Don't make sense. Why do they do it?

NARRATOR. Producers are in business for profit and want their investment back quickly. Some of them seldom care what's wasted. Reform is difficult, under requirements of the present system, and expensive. If they can pay for the drilling by skimming the cream in a hurry and calling the rest—outside of operating expenses—clear profit, they do it. Now I'm going to tell you how we can help to——

ATTENDANT (interrupting). Sorry, Buddy——

(Sound: Automobile horn; off.)

ATTENDANT (continuing). I got a customer. [Calling out as he fades:] Fill 'er up, m'am?

(Sound: Traffic noises up loud; fade out.)

POLITICIAN (speechmaking in grand eloquent manner). And so my friends, we stand prepared for any national-defense emergency, firm in the knowledge that our natural resources—our copper, our iron, our oil—the greatest store of nature's wealth in the world, bounded on the west by the Pacific on the east by the Atlantic, will be available for any demand we may choose to make upon them—not only now, but in years to——

NARRATOR (cautioning). Uk—uh——

POLITICIAN (disturbed; beginning again). Will be available for any demand we may choose to make upon them, not only now, but——

NARRATOR (again, warningly). Uk—uh——

POLITICIAN (finishing; angry). But in years to come.

[Mixed cheering of audience.]

NARRATOR (calling out, above noise). Sorry, you're wrong.

POLITICIAN (threateningly). A heckler, eh?

NARRATOR (politely). No; a plain ordinary citizen who happens o know the facts.

POLITICIAN. Do you mean to insinuate that I am deliberately misleading these good people?

NARRATOR. No; I'm not insinuating anything. I'm simply telling you that as far as oil is concerned, our national defense has questionable support.

POLITICIAN (sarcastically). Ho—so you know all about it, do you?

NARRATOR. I know we're using up our oil reserves three times as fast as foreign nations are using up theirs. I know we're exporting oil from our precious oil supply, which it might be wiser to keep at home.

POLITICIAN. So!

NARRATOR. I know our Navy depends on oil; our Army depends on oil; neither can move without oil—yet with no new discoveries our oil reserves will be exhausted in 13 years if we don't take steps to conserve our supply.

POLITICIAN (accusingly). A radical, eh?

NARRATOR. Ridiculous. I'm simply trying to tell you that perhaps what we ought to try to do is——

POLITICIAN (shouting). Throw that dirty radical out. Throw him out.

[Noise of aroused crowd. Ad lib remarks as they throw him out.]

(Sound: Door slam.)

(Music: "Shoe Shine Boy." Up—Hold—Then under throughout scene.)

SHINE (Negro dialect). Shine, mister? Shine 'em up?

NARATOR (tired). O. K.

SHINE. Nice day.

NARRATOR. Yes.

SHINE. Goin' to the ball game today?

NARRATOR. No.

SHINE. Goin' to be a good game.

NARRATOR. Yes.

SHINE. Dark or light, suh?

NARRATOR. What's that?

SHINE. Dark or light polish, sir?

NARRATOR. Dark.

[Pause.]

NARRATOR (to self). Polish— [then, quietly:]—Say, you're interested in oil, aren't you?

SHINE. Ah'm interested in anythin', suh.

NARRATOR. That polish you use has oil products in it.

SHINE. You mean this here polish ah been carryin' round for the last 3 years?

NARRATOR. Yes; paraffin wax, no doubt—some gasoline, maybe.

SHINE (surprised). Say, ah didn't know that.

NARRATOR. What would you do if there weren't any more oil to make shoe polish so's you could shine shoes?

SHINE. Reckon ah don't know, suh.

NARRATOR. It's going to happen sooner than we imagine, if we're not careful.

SHINE (worried). You all mean that, suh?

NARRATOR. Sure as fate.

SHINE. Ain't nothin's sure'n fate, suh. But why's that, suh? Ah wants to know.

NARRATOR. Waste, due to ignorance and greed; that's why. Seems funny that the oil resources exploited in Illinois, Louisiana, California, Texas, Oklahoma have anything to do with you.

SHINE. Yeah. [Aroused.] But tell me, suh. What's wrong? Don't they know guys like us can't shine shoes less they give us what it takes to make shoe polish?

NARRATOR. They know. They don't seem to care.

SHINE (angry). Ah care.

NARRATOR (hardly able to credit his ears). You care? You honestly care?

SHINE. Ah sure do. That touches mah business.

NARRATOR. Well, at long last. Someone who actually seems to care. [Gratefully.] Thank you, my friend——

SHINE. You're welcome, boss. But don't anybody else know about this?

NARRATOR. I've told lots of people.

SHINE. Ain't they worried?

NARRATOR. Evidently not; but they should be. All of us would be, if we pulled our heads out of the sand and looked to the future for a bit; looked at the facts today.

SHINE. Next shoe, Boss; and what d'ys mean facts?

NARRATOR. Overproduction; inefficient methods; out-of-date equipment. But that doesn't mean anything to you, does it?

SHINE. No, suh; but it sounds bad. I got that to say for it; it sounds bad.

NARRATOR. They waste gas; and when they waste gas—the energy that forces up the oil—they waste oil.

SHINE. That don't make sense.

NARRATOR. Texas lost 300,000,000 barrels of oil, that way.

SHINE. Lawsy!

NARRATOR. So much less shoe polish for you.

SHINE (aroused). Hey—I'm a citizen, suh. Ah'll go to the Government. Uncle Sam will do somethin' about this.

NARRATOR. If he doesn't, so much as oil and gas is wasted so much is the life of what we have of it decreased. That means prices will go up——

SHINE. You mean I'll have to pay more for my shoe polish?

NARRATOR. I suppose so. And me for gasoline, and Mrs. Murphy for cooking fuel. And when our supply starts dwindling, men will lose jobs in oil fields and plants, and a hundred million people will lose a hundred million economical conveniences, and before long our whole modern civilization will be stymied.

SHINE (aroused). Boss, can't we do somethin'?

NARRATOR. Sure——

SHINE. You tell me what I can do to help, suh, and ah'll——

VOICE (off, calling). Shine. Hey, Shine.

SHINE (calling out). Comin' Boss.

NARRATOR. You just do what you can. [Sadly.] There isn't much you can do by yourself. Thanks, anyway, for listening, my friend. You've been very kind—you, with your life wrapped up in that little can of shoe polish—you're the only one who had the sense to lend me his ears.

SHINE (quietly). Here's your change, Boss.

NARRATOR (softly). Keep it. Keep it.

(Music: "Shoe Shine Boy." Up and out.)

[Pause.]

NARRATOR. (quietly, informally, simply). Dear friends, dear listeners.

Dear users of tractor oil, cylinder oil, and floor oil.

Dear dry-cleaning men, solvent desirers.

Dear leather industry, dear linoleum manufacturers.

Dear users of soap and paints and turpentine substitutes and varnish.

Dear demanders of waterproofing compounds and paving flux, of carbon electrodes and domestic fuel.

Dear makers and buyers of artists' crayons, waterproofing, insulation, paint, and pipe covering.

Dear chewing-gum chewers, canners, candle makers, and candy eaters.

Dear shoppers for cup grease, axle grease, cable grease, and elevator grease.

Dear purchasers of fuel for merchant vessels, power plants, furnaces, navies.

Dear gas consumers, artificial rubber makers, users of saccharine, dyestuffs, antiseptics, and perfumes.

Dear munition makers, cement makers, druggists, clothing men.

Dear seekers of butter, lard, varnish, and linseed-oil substitutes.

I've taken you on quite a ring-around-the-rosie. I've used up 20 minutes to tell you that our oil reserves won't last forever, but that they'll last longer than 13 years, at our present rate of consumption, if we want them to. I've told you how they've been wasted in the past; are being wasted today. I've spoken of ignorance and greed. But, have I touched you at all? Maybe I should have told a cute story about a boy and girl running out of gasoline—would that have meant more? Maybe I should have rendered our Navy useless, or shut virtually every big plant tn the country, and thrown millions out of work; maybe I could have frightened you that way. But I didn't. I stopped a train. I talked to a Mrs. Murphy. I interrupted a political speech, and spoke with a shoe-shine boy. My object was simply this—to acquaint you with a national problem—your problem. My hope was and is that you, as a Nation, will do something about this problem.

VOICE (challenging). What, for example?

NARRATOR. You—whoever you are—you sound as if you're challenging me.

VOICE. I am.

NARRATOR. Have I upset you?

VOICE. No. No more than a bad movie. But I just get sort of tired of hearing guys get up, shoot off their mouth about a problem, and say goodbye without offering some kind of constructive suggestion toward solving that problem.

NARRATOR. There are things we can do.

VOICE. What're you doing, saving them up until the oil is gone?

NARRATOR. I was afraid I'd bore you with them. Thought if I gave you a label you'd get the idea much easier and be much happier.

VOICE. Oh, we're not smart enough for you, eh?

NARRATOR. I didn't say that.

VOICE. What label are you talking about?

NARRATOR. Conservation.

VOICE. Conserve our oil, eh?

NARRATOR. You're darn right.

VOICE. Got any ideas?

NARRATOR. Lots of 'em.

VOICE. Well, go ahead—give us a sample.

NARRATOR (beginning). Your Department of the Interior—that's the Department that looks out for most of your natural resources——

VOICE. What's it been doing?

NARRATOR. It's been working on this problem. Only if it's to do a real job of conserving your oil resources for you, it's got to be given the power by Congress.

VOICE. There ought to be something that can be done.

NARRATOR. There is. One way is to create a body in that Department of the Interior to fight the waste of oil for us.

VOICE. I'm listenin'.

NARRATOR. Give that body the power to go into an oil-producing State and say:

OFFICIAL (pleasantly). Hello. We've come to look over your oil fields to see if there is, or is likely to be, any waste of oil here.

VOICE. So?

NARRATOR. These men walk in, look around, and report to the State's oil conservation officials—all oil-producing States except Illinois have some sort of oil-conservation law.

VOICE. Report what?

NARRATOR. If there's no waste, say—

OFFICIAL. O. K., fellas, thanks.

NARRATOR. If there is, say something like—

OFFICIAL (friendly). Look; certain methods and practices used in getting the oil out of the ground in your State are wasting the Nation's oil reserve. We'll tell you what they are and what you can do to stop that waste and conserve your oil. How about it?

VOICE. Supposing the State says: "Nerts."

NARRATOR. Then let us permit this body that's looking out for the interest of the Nation as a whole—you, me, and the guy in the V-8—to say—

OFFICIAL (sincerely). Well, if you won't stop this waste, then we the people will institute legal action to make you do it. Our oil must be conserved!

NARRATOR. And—and we might also not allow in interstate commerce, not only oil produced in violation of State law, as we do today, but oil produced wastefully as well. (Pause.) There, my friend, is a double-barreled suggestion for you. Proposed legislation to that effect is now before your Congress. (Quietly.) Does that answer your question?

[Pause.]

Quickly, please, my half hour is almost done and I have but only begun upon a subject vital to every living human being on this continent. I want to know; have I made myself clear?

Have I?

VOICE. Yes.

NARRATOR (eagerly). Well, what do you say to all this—how do you feel about it?

[Pause.]

VOICE (slowly). Mister—you've made yourself a convert.

NARRATOR (relieved). A convert. You mean, you understand the facts.

VOICE. Yes.

NARRATOR. You're willing to face them—war on them?

VOICE. Yes.

NARRATOR. Good. There's satisfaction in that. Then my 30 minutes haven't been in vain—haven't been "so much oil"—but you're only one. What about that locomotive engineer? Did he understand? And Mrs. Murphy—they're important, our Mrs. Murphys. And that service station attendant, and that politician, and that shoe-shine boy. What about them? Did they understand?

VOICE (slowly; thoughtfully). I don't know, mister, but I'm an optimistic sort of guy. I've a hunch they heard.

(Music: In, then down softly under.)

SHINE (through filter; his thoughts audible). Ah don't know nothin' about nothin'. Yet ah got what that man was gettin' at. And ah'm sure that smart people livin' all over the country—[quickly] and there's lots of 'em—they ain't gonna let that oil be wasted like it is fo' long. Ah'm surer than fate, ah is. Ah'm [fading] sure'n fate.

(Music: Up and down under.)

ENGINEER (through filter, thinking aloud). Looks like I'll make Kansas City all right, with a minute to spare [pause]. Can't help thinkin' over what that feller said. Darned if I don't believe he's got somethin' there. Men like me have got to make their voices heard. We can't afford to waste our oil.

(Music: Up and under.)

MRS. MURPHY (filter). Saints forgive me, it's just that I was so busy gettin' up lunch for a family of nine children I didn't stop to think. I'm thinkin' that ladies like me, who cook on oil and gas stoves, who need oil to make a kitchen a kitchen—they're not going to be quiet about this. They're goin'to be sayin' we don't want to see oil wasted any more than we want to see good food wasted. If all the Mrs. Murphys and Mrs. Thomases and Mrs. Cohens and Mrs. Joneses mean a thing in this world, I'm sure as I'm livin' that man will have the women to support him, and that—as he ought to be knowin' if he's got a brain at all—is three-fourths the battle won.

(Music: Up and under.)

ATTENDANT (Through filter; thinking). That business about oil: Only 13 years of reserves, and me in the service station business. My kid will be ready for college in 13 years. He's got to have a chance. [Suddenly; determined.] I've got it—I'll help. That's what I'm goin' to tell everybody I know. I'm gonna tell 'em the facts like that man told me—tell every guy that stops, whether he stops for gasoline, water, or free air. I'm gonna tell 700 people a week, we gotta conserve our oil not only for ourselves, [fading] but for our kids!

(Music: Up and under.)

POLITICIAN (through filter, thinking). In all my public life I've never avoided facts and I don't intend to begin now. National defense. It's a major problem facing this country today. If the waste of our oil threatens our national defense, I'm interested. If this oil-conservation problem is so important that oil reserves have been already set up to protect our Navy, then I'm going to see what I can do to protect my constituents—the every day oil users. What's more, if it's legislation that we need to conserve our oil, I'm going to lend my support to securing such legislation. Conservation—here's a question upon which politics should never intrude. From now on, I fight for conservation.

(Music: Up.)

VOICE: I'm an optimistic sort of guy. I got a hunch they heard.

(Music: Swells and out.)

(Music: Up and out.)

VOICE: Here is a special announcement—listen carefully.

SECOND VOICE: Every listener to this program may have a free publication packed full of interesting information about our country's natural wealth. It is a publication which every man, woman, and child in America should have. Send for your free copy now! Address, What Price America, Washington, D. C., and a free publication will be sent to you at once. Let me repeat, if you want this important booklet, just send your name and address—a post card will do—to What Price America, Washington, D. C.

VOICE. Next week at this same time, the Department of the Interior in cooperation with the Columbia network, presents the thirty-seventh program of the series of What Price America. Listen next week to What Price America.

(Music: Up and out.)

ANNOUNCER. The script for this program of What Price America was written by Lou Hazam. (Pronounced Has-'um.)

(Research—Hugh Russel Fraser.)

(Music—Leon Goldman.)

(Directed for Columbia by ——— ———.)

[Program No. 25]

WHAT PRICE AMERICA?

(Music: Theme—Up and diminuendo.)

VOICE (dramatically). What Price America!

Music: Up—Ominous and under.)

(Sound: Horses straining—Creak and clank of harness—Cries of the ploughman.)

SECOND VOICE (calling above sound). Plow up the soil! Plow up the soil!

(Sound: Segues to pickaxes ringing into rock.)

THIRD VOICE (calling above sound). Dig into the ground—Silver! Gold! Coal! Copper! Dig up the ground!

(Sound: Segues to chopping of trees—Crash of falling timber.)

FOURTH VOICE (calling above sound). Chop down the trees! Destroy the forests! Chop down the trees!

(Music: Dissonant chord and out sharply.)

[Pause.]

VOICE (dramatically). This waste must stop!

SECOND VOICE. Waste must give way to conservation.

THIRD VOICE (quietly, questioningly). But what is conservation?

VOICE. The Department of the Interior, is your agency of Government charged with protecting and safeguarding the majority of your natural resources.

SECOND VOICE. Harold L. Ickes, Secretary of that Department, has said: "Conservation is the wise use of those gifts of nature upon which we rely for support, comfort, and spiritual solace. Every natural resource must be made to serve mankind while preserving all that is possible for the needs of future generations!"

(Music: Up and fade under.)

VOICE. America, you possess a rich treasure without which your civilization, the life you lead today, would be utterly impossible! That treasure is oil, God's gold. Oil is essential to your happiness and well-being; vital to your national defense! Without it, not a wheel would turn; millions would be thrown out of work; trade would cease. Yet, not so long ago, you permitted wasteful exploitation and dissipation of this limited, irreplaceable natural resource that was nothing short of a national tragedy. Today, the situation is considerably improved. But that you will never make that mistake again, America, so that you might do what you can now to aid and strengthen the conservation of your invaluable oil resources, we take you back for one more look.

SECOND VOICE. It is a critical moment in your oil history. The time is 2 p. m. in the afternoon of November 14, 1934. The N. R. A. Petroleum Code, alleviating some of the oil evils, has been in existence about a year. In Dallas, Tex., oil men are gathered to hear a speaker.

(Sound: Applause in and under.)

VOICE. This speaker—he has just been introduced. He comes forward, puts down his papers, waits for the applause to quiet. Through his speech we shall tell a dramatic, incredible story. [Quietly.] Listen, he is about to begin.

Sound: (Applause out.)

SPEAKER (just off mike throughout). "What of the future of oil? This question is more important today in 1934 than it has ever been before. I have come here today as a friend of the oil industry. I want to see it put its house in order and I want to help in that so desirable achievement if I can. I ask every man of you to forget for a brief interval that he has any personal interest in oil. Let us as thoughtful American citizens discuss this matter of vital concern to our country, for upon its happy solution depends the future happiness and perhaps even the safety of America." Let us review the past. "The hopeful experiment that brings us together today was necessary because of the collapse that occurred in the oil industry." [Fade.] The story of that collapse might well begin with the drilling of the first successful well in East Texas, in October 1930.

FIRST BANKER (through filter). Can you tell me anything about a man named Joiner—J-o-i-n-e-r—drilling a well on the Bradford farm down there in East Texas?

SECOND BANKER. Joiner? Sure. Take my advice, don't sink a penny in that venture! Why Joiner's drilled two dry holes in that East Texas land already. What's more, the big oil companies sent their geologists through East Texas long ago, and all of them said there was no oil there. Save your money!

FIRST BANKER (through filter). Guess I will. Thanks for the tip. [Fade.] So long.

[Pause.]

(Noise of crowd in and under.)

(Sound: Drilling a well.)

JOINER (late sixties—old hand). How does it look, Ed?

ED (Texan). Hello, Mr. Joiner. Don't know yet. We've been going down into that hole time and time again, bailing out mud to give the oil a chance to flow.

JOINER (tired). I see. [Pause.] Certainly got a crowd.

ED. They all heard the casing was set and cemented and we were about to drill the plug. Reckon there are 10,000 people watchin', and not only from East Texas, but from all over. All brought their lunches too.

JOINER. Yes. Lot of them got money in this. Hope for their sakes something happens.

ED (laughing). They look like they 'tend to stay here till somethin' does!

(Sound: Drilling up.)

(Crowd noises, up.)

FIRST ONLOOKER (off., in crowd, disparagingly). I'll bet my plow that's no oil well!

SECOND ONLOOKER (off., in crowd). Well, I don't know. They got a chance. I know the test didn't look promisin'; didn't get anythin' but mud. But I still think they got a chance.

(Crowd up and down.)

(Sound: Dice being shaken in the hand.)

FOURTH ONLOOKER (in crowd). How about a crap game to ease the waitin', boys?

OTHERS [ad lib replies].

(Crowd up, hold longer time, then down.)

DRILLER (slightly off, calling out). The fluid's rising, Mr. Joiner.

ED (sympathetically). You're tired, Mr. Joiner. This is too much for you. Why don't you find a place to sit down.

JOINER (quietly). I'm all right.

DRILLER (calling out, excitement rising). She's comin'. Hear that gurgling sound from the casing?

(Sound: Oil gurgling in casing.)

DRILLER (suddenly). Mr. Joiner! I think——

(Sound: Spurt of oil from well.)

DRILLER (shouting). Oil!

CROWD (cheer, laugh, ad lib hysterical joy and excitement. Take up cry "Oil! Oil!" Segue to).

JOINER (exhausted). Oil, I always dreamed it, but I never believed it.

(Crown: Fade out.)

(Sound: Fade out.)

VOICE. Oil in East Texas! Billions of barrels waiting to be brought up out of the ground. You big companies. You rush to the scene of this new discovery, vie with each other for East Texas oil!

SPEAKER (fading on). There had been ruinous competition. State laws and gentlemen's agreements had been openly flouted. So great was the burden of oil upon the market, and so heavy the pressure resulting therefrom [fade] that the foundations of the industry were literally crumbling.

OIL MAN (staccato, ordering). Get us some of that East Texas oil. Can't understand how we missed up on that! Send our man out there at once!

SECOND OIL MAN (almost before preceding character finishes). Get out to the East Texas field! Get all the leases you can! Get the jump on the other companies! Hurry!

THIRD OIL MAN (same). Send all the men we can spare to East Texas! Get us some of that oil! [Fade.] Step on it!

FIRST REPRESENTATIVE (fading on). Here you are, Mr. Brown, sign here. [Fade.] I tell you——

SECOND REPRESENTATIVE. You'll never get a better offer, Mr. Smith, just put your name on [fade] this dotted line, and——

(Sound: Symphony of numerous wells being drilled, in and under.)

VOICE. Oil—[louder]—Oil—[louder]—Oil—[louder]—Oil!

SECOND VOICE (rapidly). One well, two wells, three wells, four wells, five wells, six wells, six hundred wells, eight hundred wells. Eight hundred wells in 4 months! Eight hundred wells in one field producing 160,000 barrels of oil a day!

(Sound: Change to sound of working well.)

FIRST OIL MAN. Get out our oil! Produce as much as possible!

SECOND OIL MAN. Get out our oil! Produce as much as possible!

(Sound: Producing wells, up.)

FIRST OIL MAN (calling out). Who'll buy my oil? Sixty cents a barrel!

SECOND OIL MAN (calling out). Buy from me! I'll sell mine for 50 cents a barrel! Fifty cents!

FIRST OIL MAN (surprised). What? Wait, here, I'll let mine go for 35 cents a barrel! Only 35 cents!

SECOND OIL MAN (determined). Twenty cents! Twenty cents a barrel!

FIRST OIL MAN (incredulous). But 20 cents a barrel?

SECOND OIL MAN. Yes! I'll sell my oil for 20 cents a barrel. I can get a lot more oil.

FIRST OIL MAN (angrily). I'll take 10 cents a barrel for my oil! Ten cents!

SECOND OIL MAN. Hey!

FIRST OIL MAN (determined). And if you take all I can get, you can have it for a nickel a barrel!

(Sound: Oil wells, up and out.)

FIRST COMMISSIONER (fading on). We Texas commissioners must stop this waste of oil on a market that's already a mess! Think of it—a nickel a barrel!

SECOND COMMISSIONER. We better do something.

FIRST COMMISSIONER. Right! We're facing a flooded market with the average price of oil at 20 cents a barrel. But—what can we do?

THIRD COMMISSIONER. Let's prorate the wells. Let us—on May 1—permit the wells to produce not more than 160,000 barrels daily, increasing it 15,000 barrels every 15 days for 90 days.

SECOND COMMISSIONER. An excellent suggestion! We'll prorate every single producer! [Fade.] I'll write out an order at once stating——

(Sound: Crowd in courtroom, in and under.)

FIRST OIL MAN. They can't do that to me! I ask for a temporary injunction restraining the Texas commission from enforcing proration against me. I have contracts that call for more oil than this new proration order will let me produce!

(Sound: Gavel.)

JUDGE (droning). Injunction granted.

SECOND OIL MAN (quickly). And me!

(Sound: Gavel.)

JUDGE. Injunction granted.

THIRD OIL MAN. Me, too!

(Sound: Gavel.)

JUDGE. Injunction granted.

(Sound: Gavel sounding throughout (after judge speaks) under.)

OTHER OIL MEN (calling out). And me! Me! Me! Me! Me! Me!

JUDGE (after each gavel sound). Granted, granted, granted, granted.

(Segue to sound: Symphony of producing wells, in and under.)

PRODUCER. Listen. We producers are headed for early ruin.

SECOND PRODUCER. Don't I know it; low prices and proration will never let me pay what I owe on this well. What you plan on doin', goin' to court?

PRODUCER (slyly). Why bother? That commission can't enforce proration with that small force of theirs. [Slowly.] Why not go on producin' under cover?

SECOND PRODUCER. You mean "hot oil?"

PRODUCER. Well, if you want to call it that. They'll never catch you.

SECOND PRODUCER (slowly). Say [fade] I think you got somethin' there.

FIRST COMMISSIONER (fading on). Commissioners, here are the figures. They're completing more than a hundred wells a month—producing 500,000 barrels of oil a day!

SECOND COMMISSIONER. That's far above the allowable production we set!

THIRD COMMISSIONER. Isn't anybody cooperating?

FIRST COMMISSIONER. Some producers—both independent, and large company men—are cooperating with us. But there are too many that aren't!

SECOND COMMISSIONER. How can anyone expect us, with our small staffs, to stop them from running their wells wide open?

FIRST COMMISSIONER. Just the same, we've got to find a way to stop this hot oil! It's dropped the price of oil from [fade] the Rockies to the Atlantic.

NEWSBOY (fading on, shouting). Pape-pah! Pape-pah! Governor Murray declares martial law in Oklahoma oil fields! Read all about it!

CITIZEN. I'll take one.

NEWSBOY. Thank you, sir. [Starting to fade, shouting.] Read all about it! Governor Murray declares martial law in Oklahoma oil fields! Read——

CITIZEN (over fading newsboy). Look, Helen. Alfalfa Bill Murray says he's goin' to shut in the Oklahoma wells until a price of $1 a barrel is posted in his State!

FRIEND. That's what I call a smart move. [Fade.] Why doesn't Texas, our own State, do something about——

FIRST COMMISSIONER (fading on). Governor Sterling, we Texas commissioners are being openly defied by the East Texas producers. Some are selling hot oil at less than half the posted price of legal oil. The landowners are dissatisfied, the royalty isn't worth much at 10 cents a barrel.

STERLING. Gentlemen, as Governor of Texas, I promise you that every well will be closed tomorrow. I hereby declare martial law in East Texas!

(Sound. Marching troops in and gradually fade out.)

VOICE. September 6, 1931—For weeks the East Texas wells have been as tight as a drum.

SECOND VOICE. Price of oil moves from 10 to 68 cents a barrel!

CROWD. (Cheers, in and out.)

VOICE. But listen to what happens on October 13, 1931!

JUDGE (fading on, droning). The Federal district court stops this conservation effort of the Texas commission.

STERLING (angrily). I'm the Governor of Texas! I'm not named as a defendant. I order you, as commander of the State Militia to hold daily production in the East Texas field to the 400,000-barrel limit!

SECOND JUDGE (carefully). The United States Supreme Court does not uphold the Governor of Texas.

COMMANDER (calling order). About face! March!

(Sound: Marching troops, in and fade out.)

PRODUCER (joyfully). No more troops! The lid's off! Let's go, boys! Let's get out that oil!

VOICE. Again, violations! Again, prices fall! Many producers unable to compete with the low prices of hot oil seek redress in the courts, but to no avail. Finally——

FIRST COMMISSIONER (fading on, sighing). Sorry. We can't help you oilmen. Our laws are inadequate and our force too small. They're having the same trouble in other fields in other States. Maybe you oilmen better get together and see the Federal Government——

[Fade]. Maybe it can help you.

SPEAKER (fading on). So something over a year ago, in September 1933, the Government, with the more or less willing acquiescence of the oil industry, set up the Petroleum Code, the Code of Fair Competition for the Petroleum Industry, under the N. R. A. The theory underlying the code was that the industry through a carefully selected committee, representative of all interests, with such help and cooperation as the Government could give through an oil administrator to be appointed by the President, should govern itself. The oil industry, part of it willingly, part of it with tongue in cheek, and part of it rebelliously, accepted Government regulation as an alternative to utter ruin.

[Fade]. So the code came into being.

CHIEF INSPECTOR. Turner——

TURNER. Yes, sir.

CHIEF INSPECTOR. This oil assignment is a nasty job, I know. We have no legal authority to make arrests, enter posted premises, or look at books. But we've tackled nasty jobs before.

TURNER. Yes, sir.

CHIEF INSPECTOR. All of us will be assigned to various fields. You're to go down to Tyler, Tex., and open headquarters there.

TURNER (impressed). Yes, sir.

CHIEF INSPECTOR. You and your men are to check all pipe lines, find the by-passes used to new hot oil. Do everything possible to trace the source of hot oil.

TURNER. Yes, sir.

CHIEF INSPECTOR. Good luck. I'll join you as soon as I can.

(Sound: Oil wells.)

WELL OWNER (shouting). Get off my property! You Federal men got no right entering posted ground! Get off or I'll use this gun!

TURNER (quietly). All right, Mister. But we warn you, one day we'll find a way of stopping you.

Sound: Oil wells segue to truck running along road. Hold truck sound under.)

TRUCK DRIVER (pleased). A nice night for runnin' hot oil, all right.

SECOND TRUCK DRIVER. Yeah; not a star in the sky. [Stops, suddenly tense.] Look. Up ahead there! Men, swinging flashlights!

TRUCK DRIVER. It's the Federals!

SECOND TRUCK DRIVER (quickly, worried). What're you goin' to do?

TRUCK DRIVER. Run right through 'em, force 'em off the road, that's what I'm goin' to do! Hang on, pal!

(Sound: Truck speeding up, loud. Suddenly, scattered shots.)

(Sound: Yells of Federal men, which fade as truck whizzes by and fades out.)

[Pause.]

(Sound: Knock on door. Door opens.)

BUTLER (colored). Yes, suh?

TURNER. We want to see the lady of the house. We're Federal men.

BUTLER. She's takin' a bath now, suh, and cain't see nobody.

TURNER (firmly). We've heard that story the last three times we called. We don't believe it. One side, please. Come in, boys.

(Sound: Men entering. Door close.)

(Sound: Men walking. Footsteps stop.)

TURNER. This door?

BUTLER. Yes, suh.

(Sound: Door open.)

TURNER (reprimanding). There's no one in here.

BUTLER (confused). Well maybe——

FEDERAL MAN. Look. Turner!

TURNER. What is it? [Pause.] I'll be darned.

FEDERAL MAN. He's been controlling a secret pipe line to run hot oil from a valve back of this bathrub right here in the house!

TURNER (fading). Can you beat that!

(Sound: Oil well fading in and under.)

FRIEND. Running your well wide open, Clem?

CLEM. Why not? It only costs me a $1,000 fine a day to violate the law. But each day I can produce and store $8,000 worth of oil!

(Sound: Oil well up and out.)

[Pause.]

(Sound: Dining-table noises, in and under.)

[Laughter of diners.]

LAWYER. It's simple. Here's how we lawyers do it. All oil above the ground having been produced supposedly under the Commission's supervision is, of course, declared legal until it is proved to be illegal.

SECOND LAWYER. Yes?

FIRST LAWYER. Well now, how are you going to prove in court anything about the identity of oil?

SECOND LAWYER (slyly). I got it. Hot oil looks and smells just like legal oil.

(Both laugh uproariously.)

(Sound: Fade out.)

SPEAKER (fading out). I was not properly staffed to prosecute the runners of hot oil even if we found them with slime running from their fingers. In an attempt to discredit the oil administration, one group set up a hue and cry that it was a failure.

FIRST OBJECTOR (shouting). What about States' rights?

SECOND OBJECTOR (shouting). We don't need the Federal Government butting in here. The best way to control our industry is through a voluntary compact between States.

THIRD OBJECTOR (shouting). Yes. Let the State authorities themselves enforce such an agreement.

SPEAKER (fading out). Despite experience to the contrary in the very recent past they neglected to explain why similar attempts to accomplish the impossible had failed on previous occasions. [Change.] Then finally in 1933 the Federal Tender Board [fade] was established.

PRODUCER (angry). Now they've got us. Now they don't have to find the source of hot oil. Now I've got to have a Federal certificate—tender, they call it—to show that my oil for interstate shipment was legally produced, that it's not "hot oil." Now, they've got me.

SPEAKER. When all is said and done the oil industry has not had much to complain of with respect to the oil administration. From a profitless business as a whole when the oil administration took hold, you have been making fair profits. If each of you will look back over the past year and without prejudice or passion compare present conditions with those of the summer of '33 [fade] you will all find definite improvements in the industry.

BOOKKEEPER. Say, Tom, take a peak at my books, will you?

TOM (interested). What's up?

BOOKKEEPER (enthused). See there? That's the first time I've used black ink, instead of red, in almost a year. [Fade.] And some folks kick about the oil administration.

FATHER (fading on). Well, son, we're at last getting dividends on our oil stocks again. Maybe after all you [fade] can go to college.

WORKER (fading on). Last year this time, I couldn't get a job in the oil fields. I got one now, work less hours and [fade] get more pay.

SPEAKER (fading on). But you must do your share. We must be partners and not rivals; collaborators and not critics; protagonists and not antagonists. For if we fail it will be at the cost of the whole oil industry. You will have to pay the price. The problems of the oil industry are not insoluble. With you, we can work them out if you wish to do so. We can solve them, if together, we are determined upon that course and if, in a spirit of cooperation and understanding and mutual good will, we shall approach the subject with the purpose of finding a solution that will then serve the greatest good of the greatest number. The Government is not only willing, but ready, to fight this thing through for the ultimate good of the country as a whole. How about the oil industry?

(Applause. In, and board—fade out.)

VOICE. And so the oil industry listened to Harold L. Ickes, Secretary of the Interior, as he made that famous speech in Dallas, Tex., that day in November 1934. And so did the Nation. But the fight was not yet won. For conservation was given a severe blow, when, within 2 months after this Dallas speech, the Supreme Court of the United States declared the plan unconstitutional. Reason, because Congress in enacting section 9 (c) had delegated legislative authority to the President, without having declared its policy, established standards, or laid down rules.

SECOND VOICE. Once again chaotic conditions in the oil industry threatened. But in the very next month—February 22, 1935—Congress passed the Connally Act, a law that prohibits the shipments in interstate and foreign commerce of oil produced in violation of State law. This bill was renewed after 2 years, and was to expire at the end of last month. But last month, Congress again extended the Connally Act until June 30, 1942.

VOICE. America—since Secretary Ickes' speech in Dallas, Texas has passed an oil-conservation law which has reduced the waste he spoke of in the Texas Panhandle, 90 percent. Other States—Arkansas, Kansas, Louisiana, Michigan, New Mexico, and Oklahoma—all have oil-conservation laws, and last month California joined the list of those seeking to preserve this invaluable natural resource from needless dissipation. This is conservation indeed. But one large oil-producing State still remains outside the conservation list. Illinois has not yet passed an oil-conservation law.

SECOND VOICE. America—today you have 370,000 wells producing petroleum products that make your automobiles, airplanes, streamlined trains possible.

Without oil, our Nation, as it exists now, could never be. This fact, coupled with two other vitally important facts——

VOICE. One—our oil supply cannot be replaced. Two—our oil reserve, 17,000,000,000 barrels, is definitely limited.

SECOND VOICE. —should set you thinking about oil conservation! You, and all of us, should seek closer coordination of Federal and State responsibilities—Let us conserve our oil "while there is oil to conserve!"

VOICE. The Department of the Interior, principal guardian of your natural resources, is doing all within its power to see that you get the most out of your oil reserve. Let your voice be heard if you are not to suffer in the years to come. Remember, America, oil literally makes your modern civilization. Conserve it! Then only can you look to the future, America!

(Music. In and up, then under.)

VOICE. Here is a special announcement—listen carefully.

SECOND VOICE. Every listener to this program may have a free publication packed full of interesting information about our country's natural wealth. It is a publication which every man, woman, and child in America should have. Send for your free copy Now! Address, "What Price America?" Washington, D. C. and a free publication will be sent to you at once. Let me repeat, if you want this important booklet, just send your name and address—a post card will do—to "What Price America?" Washington, D. C.

VOICE. Next week at this time, the Department of the Interior in cooperation with the Columbia Network, presents the twenty-sixth program of the series of "What Price America?" Listen next week to "What Price America?"

(Music. Up and out.)

ANNOUNCER. This script was written by Lou Hazam. (Pronounced Has-'um.)

(Research—Hugh Russel Fraser.)

(Music—Leon Goldman.)

(Directed for Columbia by Earl McGill.)

[Program No. 24]

WHAT PRICE AMERICA?

(Music. Theme—Up and diminuendo.)

VOICE (dramatically). What Price America!

(Music. Up—Ominous and under.)

(Sound. Horses straining— Creak and clank or harness— Cries of the ploughman.)

SECOND VOICE (calling above sound). Plow up the soil! Plow up the soil!

(Sound. Segues to pick axes ringing into rock.)

THIRD VOICE (calling above sound). Dig into the ground—Silver! Gold! Coal! Copper! Dig up the ground!

(Sound. Segues to chopping of trees— Crash of falling timber.)

FOURTH VOICE (calling above sound). Chop down the trees! Destroy the forests! Chop down the trees!

(Music. Dissonant chord and out sharply.)

Pause.

VOICE (dramatically). This waste must stop!

SECOND VOICE. Waste must give way to conservation.

THIRD VOICE (quietly, questioningly). But what is conservation?

VOICE. The Department of the Interior, is your agency of Government charged with protecting and safeguarding the majority of your natural resources.

SECOND VOICE. Harold L. Ickes, Secretary of that Department, has said, "Conservation is the wise use of those gifts of nature upon which we rely for support, comfort, and spiritual solace. Every natural resource must be made to serve mankind while preserving all that is possible for the needs of future generations!"

VOICE. What is our obligation in this Democracy to use our resources wisely? Listen to the story of our past; hear of our triumphs and failures; know how to protect our heritage and the heritage of our children; Listen America!

(Music. Up and under.)

VOICE. Supposing now—this very minute—the unbending finger of fate wrote a gigantic message in the sky—"No More Oil, America!" Supposing now—this very minute—every petroleum product you have were suddenly denied you! This, then, would be you, America!

(Music. Up wildly and fade.)

(Sound. Suggest utter confusion and hysteria of a population in and under. Automobile horns, in hectic symphony.)

(The following, rapidly, one after the other:)

DOCTOR. I'm a doctor. I must get there at once. A woman is dying!

ATTENDANT. Sorry, Doc. We haven't a drop of gasoline in the station.

(Sound. Fire siren.)

FIREMAN (shouting). It's the schoolhouse! And we can't move our fire engines!

TRUCKDRIVER (through filter). Listen boss, I'm carryin' perishable goods—fruit and vegetables—on this truck. How am I gonna get them there before they spoil?

TICKET AGENT. The Twentieth Century Limited can't leave this station, Madam. You'll have to get to New York by stagecoach.

FARMER (surprised). Well I'll be doggone. I can't use my tractor. I can't plow my farm.

HUSBAND (ordering wife). Get the children. We'll leave the house and find a restaurant where they cook with a coal stove.

DISPATCHER (droning, via radio). All airplanes are grounded. All airplanes are grounded.

BOSS. You men needn't report to work tomorrow. This plant's shutting down. Can't run our machines without oil.

(Sound: Telepraph key. In and under.)

TELEGRAPHER. S O S. S O S. Steamer *America* calling. Stopped in mid-ocean. One thousand aboard. Send help at once.

MAN. Get some candles, Martha, or we won't have light.

ADMIRAL (dictating). To the Navy Department: Fleet unable to leave port for Pacific coast as ordered. [Fade.] Guns useless without oil. Awaiting further word on.

(Crowd up and fade.)

VOICE. Preposterous, ridiculous, bunkum, rot?— No, America. Silly, imaginative, extravagant?— No, indeed, America. Our entire modern civilization depends on oil. It is absolutely irreplaceable. Dissipate this one natural resource of ours, and that danger is our danger. It would creep upon us slowly, however softly, so we would not notice at first. [Suddenly.] America, the seeds for such a calamity already have been sown, are continuing to be sown now.

(Music: Up and fade under.)

SECOND VOICE. The story of the Petroleum Industry begins with an idea born in the mind of a man such as you and I. The man, George Bissell, a New Englander. The scene, New York City. The time, the summer of 1856. Bissell walking along the street catches sight of a strange looking bottle in the window of a drug store—enters—[fade] and is greeted by the druggist.

DRUGGIST. Yes, sir. What can I do for you, sir?

BISSELL. That bottle in the window.

DRUGGIST. Yessir. Kier's Petroleum or Rock Oil. Here's a bottle right here, sir. Wonderful curative powers— A natural remedy. Read what it says on the label.

BISSELL (reads):

"The healthful balm, from Nature's secret spring,
The bloom of health and life to man will bring;
As from her depths this magic liquid flows
To calm our sufferings and assuage our woes."

DRUGGIST. It's marvelous. I've sold hundreds of bottles— May I ask you your ailment, sir?

BISSELL (quietly). I don't have an ailment, friend. Only an idea.

DRUGGIST (perplexed). An i—?

BISSELL. How much is it?

DRUGGIST. Fifty cents.

BISSELL. That's cheap, for what it may do for me— I'll take it.

(Music: in and down to fade.)

VOICE. Back to New Haven hurries George Bissell—calls a meeting of the stockholders of the Pennsylvania Rock Oil Co.

(Murmur of group in meeting, in. Stops when Bissell speaks.)

BISSELL. Gentlemen, I call your attention not to the advertising of the medicinal properties in the bottle, but to the picture of the salt well on the label, and to what is written under it.

FIRST STOCKHOLDER. It says: "Procured from a well in Allegheny County, Pa.. 400 feet below the Earth's surface."

ALL. (Ad Lib interest.)

BISSELL (continuing). Oil has been appearing in salt wells for years, as you all know, cursed by the salt men, who sometimes have to abandon a well because of it——

SECOND STOCKHOLDER (calling out). What's your point, Mr. Bissell?

BISSELL. Well, you remember the recommendations made to us 3 years ago by Professor Silliman of Yale, the chemistry professor to whom we gave samples of oil from our properties near Titusville, Pa.?

ALL. (Ad lib replies.)

FIRST STOCKHOLDER. Professor Silliman was sure we had a raw material from which we could inexpensively manufacture many valuable products.

SECOND STOCKHOLDER (adding). Could be used like coal oil, as an illuminant.

BISSELL. Well, gentlemen, if you can sink an artesian well for salt, and get oil. I believe you can sink a well for oil and get oil.

ALL. (Ad lib assent.)

BISSELL. Let's send a man to Titusville to do just that.

ALL. (Ad lib general endorsement and enthusiasm.)

(Music: In and fade under.)

VOICE. Now our man is E. L. Drake, an exrailroad conductor, promptly christened "Colonel" for business purposes. To Titusville he goes in May 1858, and after futile first attempts to dig a well, decides upon drilling. In June 1859, drilling tools, hand-made by "Uncle Billy" Smith, the town blacksmith and an experienced brine-well driller, begin drilling into the earth. Days—weeks go by, with no results. Faithfully "Colonel" Drake returns to his well each day, suffers the jibes of his neighbors.

(Sound: Drilling in, and under.)

FIRST RESIDENT (wise guy). What you doin' Colonel? Diggin' for worms?

OTHERS. (Laugh loudly at the Colonel.)

SECOND RESIDENT (shouting, off). Makes a nice musical noise anyway, eh, Colonel?

OTHERS. (Laugh derisively.)

THIRD RESIDENT (to friend). No fool like a Yankee fool!

FRIEND. Drake's folly!

OTHERS. (Laugh.)

DRAKE (simply, undiscouraged). There's oil here, gentlemen. And wal, I intend to get it.

OTHERS. (Laugh—Fade.)

(Music: In and down to fade.)

VOICE. Eighty years ago this summer—August 27, 1859—the sleepy town of Titusville was suddenly aroused by the excited entrance of Uncle Billy's son astride a mule.

(Sound: Hoofs of mule along the street.)

SONNY SMITH (shouting wildly). Oil! Oil!

VOICES. (Ad lib questions, surprise, astonishment.)

SONNY SMITH (shouting). Oil! Oil! See?——

VOICES (take up the cry). Oil! Oil!

LOUD VOICE (shouting). The Yankee's struck oil!

Crowd greatly excited.

(Music: In and under.)

VOICE. Yes, the Yankee struck oil. With the drill at 69½ feet—suddenly, unexpectedly, there it was. It is a day that Titusville will never forget. Everyone in town drops what he is doing and rushes out, to find "Uncle Billy" calmly, unexcitedly filling a tub, tin cans, barrels, anything that he could lay his hands on, with that dark green liquid that was to put a nation on wheels, usher in a totally new civilization.

(Music: Up and down.)

VOICE. But our story is a story of waste. And it begins right there, in Titusville. Picture if you can a town overrun—hundreds, thousands coming from far and near, grabbing land, seeking ways to drill, striking oil—oil!

(Sound: Symphony of drills, in and under.)

ASSISTANT (shouting). Jenkins brought in a new well! Jenkins!

BOSS (to assistant). Get the land next to Jenkins! Drill a new well as close to his as you can! We'll draw from that same pool for ourselves! [Fade.] Hurry! [A slight pause.]

ASSISTANT. Jenkins is drilling another well to offset ours!

BOSS. Then we'll drill another well to offset the new one! Hurry—First man down gets the most oil!

(Music: In and down excitingly.)

VOICE. On and on—offset well to match offset well—5, 10, 15 wells where one would do. Neighboring property owners drawing oil from the same pool—hurriedly, clumsily—no thought of waste.

SECOND VOICE (explaining). It's like straws in a chocolate soda. You draw on yours—I draw on mine. The fastest gets the most.

VOICE (emphasizing). Only, you two get all the chocolate soda. With an oil well you just get part of the oil. Thousands upon thousands upon thousands of barrels are left in the earth, never to be brought to the surface.

SECOND VOICE. Gas is blown off into the air—gone forever!

OILMAN (coming on). Who wants gas? I'm interested in oil not gas!

THIRD VOICE (quietly). Don't you realize that it's the pressure of gas that forces up the oil. Waste that gas and you lose oil.

(Warning.) Soon there won't be any more oil coming out of your well.

OILMAN. There are other wells to dig, aren't there. Tell it to John Paul Jones!

VOICE. Gas, that could have been used for lighting, heating, cooking—gone with the wind! Transportation, too, is a problem that breeds waste.

BOSS (staccato). Are you a teamster?

TEAMSTER. Yessir.

BOSS. You're hired! Get me more men and I'll pay you a bonus for every one you get. I've got to move this oil!

VOICE. Oil! Oil! Black gold! "Got to be moved"! Mile after mile of wagons wallow through the muddy road.

(Sound: Heavy oil wagons. Horses straining. Whips snapping.)

TEAMSTER (urging horses). Git on there, Jerry! Giddup, now!

(Sound: Wagon passing by.)

WAGONER (calling out, off). He's sinking in that mud, Mister. He'll never get out of that. You're stuck! [Laughs.]

TEAMSTER (cursing). Dag blast it!

WAGONER. Leave yer oil or dump it, Mister, and go back and get a new load. There's a lot more where it came from! [Laughs.]

VOICE. Oil—Shipped on flat barges that cover a river like a blanket.

SECOND OILMAN. I've an idea. Let's dam up the water like they do during a log jam. Then open the dam and let the water carry those barges downstream!

THIRD VOICE (cautioning). But that will smash some of the rafts, break open the barrels, and waste hundreds of gallons of oil.

SECOND OILMAN (unconcerned). What of it? There's a lot more where it came from!

VOICE. Waste—waste. A new resource—a young nation. A young nation out to "get rich quick!" Oil now, means money now, $20 a barrel! Why worry about tomorrow?

(Music: In and up then down.)

VOICE. Meanwhile, America lights its homes with kerosene lamps and thinks it's wonderful. Kerosene is what oilmen are after—and they curse loudly a bothersome byproduct.

THIRD OILMAN (angrily). That darn gasoline; more trouble than it's worth.

WORKER. What'll we do with it?

THIRD OILMAN (impatiently). Throw it away. Do anything, but get rid of it.

WORKER (suddenly). I know. Tomorrow's the Fourth of July.

SECOND OILMAN (waiting). Yeah?

WORKER. Why not dump that gasoline in the river. Get all of the other oilmen to do the same. Most of 'em are doing it anyway.

OILMAN (interested). Yeah?

WORKER. Then we'll put a match to it and let it burn. What a sight!

OILMAN (laughing loudly). Sure, sure; that's fine. At least that gasoline will give us a laugh. Go ahead. It'll be patriotic. [Laughs fading.]

(Music: Up and down.)

VOICE. Gasoline, gasoline you'll never see again, America—despised, thrown away as fast as it is found. Millions of gallons you might have filled your car with today will never be available to you because of that waste.

SECOND VOICE. The 2,000 barrels of oil produced in 1859 doubled hundreds of times with the passing of the years. New oil fields spring up to join Titusville; oil fields elsewhere in Pennsylvania, and in Ohio, West Virginia, Kansas, Kentucky, California. Oil, get it out of the ground, get it to America. It is 1865; the Civil War is over and soldiers are pouring into the oil fields to woo dame fortune. In Titusville, Samuel Van Syckel sits with his friends [fade] in warm discussion.

SYCKEL (determined). I don't care who has failed to build a pipe line! Water can be pumped uphill and down—why not oil? Come in with me, friends, and we'll build a successful pipe line to transport oil.

First Friend. Impossible, Sam. It won't work.

Syckel. (insistent). It will!

Second Friend. You'd be a fool to try it, Sam. (Pause.)

Syckel (quietly). I can see that I've got to talk with men of imagination. (Pause.) Excuse me, gentlemen.

(Sound: Footsteps fading as he walks off.)

First Friend (sighing). Gets me how some people take to crazy ideas.

(Music: In and down to fade.)

Second Voice. Syckel finds friends "with imagination," and after a period of experimentation begins to lay a two-inch pipe line the 4 miles from Pithole to Miller Farm, 2 feet underground to be "out of the way of the farmer's plow".

(Sound: Men letting pipe down into trench, digging, etc.)

Foreman (cautioning). Easy does it men; easy.

Teamster (off, shouting an order). Drop that pipe!

Voices of Workmen (frightened). It's the teamsters!

Foreman (shouting back, belligerently). What do you teamsters want?

Teamster (off). There ain't gonna be no pipe line laid, Mister. That's our business, carrying oil. You ain't got no right doin' us outta work!

Foreman (aside—to his men). Get your guns, men. [Calling out, aloud.] This pipe's goin' down!

Teamster (off, shouting warning). We'll rip it up fast as you lay it!

Foreman (aside to his men). All set men?

Workmen (ad lib replies confidentially.)

Foreman (shouting defiantly to teamsters). Try it!

Teamster (still off, pause, then). Oh, guns now, eh? (Sarcastically.) The guns Mr. Van Syckel ordered from New York. (Defiantly.) We ain't afraid of them!

Foreman (shouting challenge.) Come ahead, then!

Teamster (to his mates). All right boys!—let's go!

Teamsters (shouting as they run forward).

Foreman (aside). Shoot over their heads first, men. (Aloud.) Fire!

(Sound: Volley of Rifles.)

A Workman (laughing). Look at 'em run!

(Music: In and down.)

Second Voice. In one month Van Syckel's 4 mile pipe line is completed. At one dollar tariff a barrel, 800 barrels of oil are pumped through it, with little or no leakage, in the course of a day. It marks the beginning of the end of teamsters for oil. America now has transportation for its oil—pipe lines and railroad—railroad with strange new oil-carrying tanks mounted on flatcars.

Music: Up and down.)

Voice. The pipe lines that follow in the wake of Van Syckel's do not by any means mark the end of waste in the oil industry. Oil and gas both continue to gush forth in profusion. No one believes either will ever give out. When wells cease to produce commercial quantities of oil, owners abandon them—chase "God's Gold" to new fields. That oil they leave in the ground—some day it will cost you, America, a small fortune to get at it again.—But in 1866 that doesn't matter. Get oil! Store it in tanks if you can't sell it. But get oil! Suddenly——

Second Voice (shouting). Over production! Oil, now 10 cents a barrel, compared to twenty dollars a barrel when Drake sold it. Oil bubbles burst in the face of investors. At a meeting of the Producers Protection Association——

Chairman (fading on). And those, gentleman, are the facts—we must face them. We must cut down our oil production until our surplus is used or we're ruined—all of us!

First Producer (off, calling out). Mr. Chairman.

Chairman. Mr. Brown.

First Producer (off). May I add that unless we conserve our oil supply, the day may not be far distant when we won't have any oil to sell—even at 10 cents a barrel!

Chairman (sternly.) Mr. Brown, we're in this business to make money—we, not our grandchildren.

Producers (ad lib general agreement.)

A Producer (off). What we're here for is to get the price of oil raised!

Second Producer (off). Mr. Chairman.

Chairman. Yes, Mr. Thomas—go ahead.

Second Producer. I move the suggestion advanced earlier. Let us shut down all work on Sundays and start no new wells for 90 days.

Third Producer. I second the motion!

All. (Ad lib general agreement.)

THIRD PRODUCER (off; objecting). How about me? I'm new to the game. You men have your oil. I'm just beginning to get mine.

ALL (hoot him down.)

CHAIRMAN. Gentlemen, you've heard the motion. All in favor say "aye!"

ALL. Aye!

(Music: In and up, then down.)

VOICE. The first attempt to control petroleum production found those agreeing to limit themselves to 15,000 barrels a day overproducing 5,000 barrels, owing to a guaranteed price contracted for by a refiners association.—The contract was canceled. This, like many other attempts to come, was a failure.

(Music: Up and down to fade.)

SECOND VOICE. Now let us turn to gas, for gas begins to occupy attention. Wells go down, seeking gas alone. In the town of Titusville, in 1872, gas is ready to be piped from the Newton well, 5 miles away to 250 homes and industries. All Titusville awaits the moment. There is gaiety—celebration.

(Music: Up lively and under.)

(Carnival crowd in and under.)

OLD TIMER. I never thought I'd live to see this day.

MAN. We won't have to trim our lamp wicks anymore and fill those old lamps every day.

OLD TIMER. We'll get a light that we can really see by——

YOUNG MAN (off, crying out). Here it comes!

(Cheers of populace.)

THIRD MAN (thrilled). Look—look at all those homes light up. All aglow like a Christmas tree. It's beautiful—beautiful.

(Music: In and out.)

VOICE. Gas, America—gas to light homes, to be used as fuel for cooking and for industry!

SECOND VOICE (coming on). Surely that stopped the waste of gas. Now there's a valuable use for it—now it's worth plenty.

VOICE (sadly). No—no. The waste goes on. It is not the first time that man played the fool—it won't be the last. When the famous Grapeville gas well is later discovered at Murrysville, Pennsylvania, there will be mile after mile of burning gas flares, just for extravagant display.

SECOND VOICE (protesting). But why—why?

VOICE (simply). They honestly believe the gas supply is unlimited. [Music]. Now let us skip through the years a little more rapidly—for each, adding another black mark against the word "waste," and another zero for "conservation." More wells, more oil taken from the ground. At Bradford Field the largest of its time—nearly 15,000 wells are drilled—hundreds a month—with absolutely no market to be found for their product.

SECOND VOICE (dramatically). In 1884 there is enough oil stored there alone to meet the demands of the refiners for over 19 months if all fields quit producing!

VOICE. Another curtailing movement—a big one. But once prices rise, oil wells sink again. America is still a young nation. It has a lot to learn——

(Music: Up and out.)

(Crowd laughing, in and hold under.)

VOICE. It is 1892—a man named Charles E. Duryea sits in a horseless carriage, in Springfield, Massachusetts and insists to a laughing crowd (fade) that he doesn't need a horse——

BYSTANDER (laughing). You mean to sit there and say that you don't need a horse to make this thing go?

DURYEA (about 40; at ease). No; not at all.

SECOND BYSTANDER. Then [laughing] how will your buggy move?

DURYEA. The power of this internal combustion engine will move it.

(All laugh hysterically as if it's a big joke.)

THIRD BYSTANDER (between laughs). A magic engine, eh? And what makes the engine go?

DURYEA (carefully). Gas-o-line.

SECOND BYSTANDER (as if it's ridiculous). Gasoline ain't no good for that——

DURYEA. You're mistaken my friend. It will make this carriage move just as if it were pulled by horses.

(All laugh. Finally.)

DURYEA. Well, neighbors—I can see I've got to prove it. Very well. [Warningly.] Stand out of the way, please.

(Sound: Old horseless carriage being cranked; engine starting; then the carriage moving, and fading out; crowd stops laughing meanwhile; quiet, then.)

BYSTANDER (completely taken back.) Well I'll be switched!

(Music: In and fade under.)

VOICE. And so the automobile comes to man—5 cars produced in 1895, 25 cars in 1896, 100 cars in 1897, 11,000 cars in 1903. Petroleum now has a new market. No longer is gasoline to be cursed as a nuisance!

SECOND VOICE. But 1903 saw a further innovation—the first inkling of still another demand for gasoline. To Kill Devil Hill, near Kitty Hawk, North Carolina, two brothers, Orville and Wilbur Wright take a strange mechanical bird. Orville enters it—(fade) Wilbur stands alongside.

WILBUR. Ready, Orville?

ORVILLE (slightly off). Yes; let her go.

(Sound: Propeller of plane; then plane rising. Hold under.)

VOICE. Twelve seconds in the air—the first successful flight in a heavier than air machine! Here is something that will never be able to exist without gasoline.

(Sound: Out.)

SECOND VOICE. And 1 year later, to America is brought sensationally home still another future for petroleum. Listen—the captain of the steamship *Nebraska* is writing in his log——

(Sound: Pen scratching in and under.)

CAPTAIN (fading on). Arrived in the port of New York safely. We have come 12,745 miles from San Francisco burning oil instead of coal—California oil. And we are going back on oil.

(Music: In and out.)

VOICE. The automobile, the airplane, the steamship—land, air, and sea—oil is soon to be monarch. As if foreseeing this demand, the years 1901 to 1905 found oil gushing forth in huge quantities in Texas and Oklahoma.

(Sound: Telegraph key, in and under.)

TELEGRAPHER. SPINDLETOP, TEX.—500,000 barrels of oil flow before we can shut in. It's a gusher!

(Sound: Telegraph key up loud and under.)

SECOND TELEGRAPHER. Glenn pool, Oklahoma Territory. This field sending oil production up 5 million barrels.

(Sound: Out.)

VOICE. Apparently everywhere—oil. How much more might be produced and marketed at a reasonable price, if scientific methods are used, can only be estimated. Waste gnaws not only underground, but above ground, due to earthen storage. Twenty-five cents a barrel forces operators in other fields to produce at a loss. But owners of the new gusher wells are deaf to all reason. Get it while the getting is good; every man for himself!

(Music: In and down.)

VOICE. Glenn pool is followed by Cushing field in 1912. A new discovery of field, Eldorado, Kans., is credited to the State geologist in 1913. Again the market breaks; again regulation is attempted. Oklahoma passes an oil-conservation law, which prohibits waste. Then new demands help produce a scarcity. But again new fields are found. Mars sends a war to take all these new fields can produce. Soon America joins the fighting.

(Music: "Over There," in and under.)

SECOND VOICE. 1918, in France—Clemenceau speaks—

CLEMENCEAU (French accent). At this decisive moment, the French Army must not be exposed to scarcity of petrol. A failure in the supply would cause the immediate paralysis of our armies, and might compel a peace unfavorable. If the Allies do not wish to lose the war at the moment of the great German offensive, they must not let France lack petrol, which is as necessary as blood.

(Music: Up and down.)

VOICE. America listens, declares "gasolineless Sundays," sends its oil abroad. "The torch borne high on Flanders Field is a gasoline torch." Truly the Allies float to victory on a wave of oil, but 80 percent of it is American oil. Soon statistics will show that we are depleting our supply of oil far in excess of the rate that foreign countries use theirs.

(Music: Up and out.)

SECOND VOICE. On through the years we go.

VOICE. 1920—California produces 68 billion feet of gas.

SECOND VOICE. Six billion twenty million feet of that is wasted.

VOICE. 1923—production, 300 billion.

SECOND VOICE. Wastage—190 billion.

VOICE. Writes President Calvin Coolidge to the Secretaries of War, Navy, Interior, and Commerce, in December 1924—

COOLIDGE. SIRS: It is evident that the present methods of capturing our oil deposits is wasteful to an alarming degree. It is even probable that the supremacy of nations may be determined by the possession of available petroleum and its products. We are not today facing an undersupply of oil. The production of our 300,000 wells is in excess of our immediate requirements. That overproduction in itself encourages cheapness, which in turn leads to wastefulness and disregard of essential values. I have constituted a Federal Oil Conservation Board to study the Government's responsibilities.

SECOND VOICE. The Government's responsibilities. Your responsibilities. At last the Federal Government steps into the picture to conserve oil.

VOICE (quickly). More figures. For California alone, 1920–32: Gas, one of your essential natural resources, wasted to the tune of over 1 trillion feet.

CONSUMER (uninterested). Ah; figures, figures, figures——

SECOND VOICE (snapping the challenge). All right, let's speak in human terms. Listen! The place: office of the local gas company; the manager is speaking to a tired and discouraged customer:

MANAGER (crisply). Sorry, Mr. Murphy, we'll have to shut off your gas if you don't pay your bill.

MURPHY (pleading). But it's such a big bill. All I'm askin' for is time. I've got to have gas in my home. As soon as I get on my feet, sir, I'll——

MANAGER (cutting him short). Sorry, Mr. Murphy——

VOICE (in contrast). Listen, 90 percent of the gas produced around Oklahoma City in 1933 was wasted—enough gas to provide all the fuel for a city of 50,000 population for 75 years!

MANAGER (mechanically). Sorry, Mr. Murphy.

VOICE. Listen! In 1934, at Kettleman Hills, Calif., enough gas was wasted per day to supply the industrial needs of all San Francisco and the whole northern part of the State!

MANAGER (mechanically). Sorry, Mr. Murphy.

VOICE. Listen. In 1934, in the Texas Panhandle, 1 billion cubic feet of gas a day was going to waste, enough gas to gin all the cotton grown in Texas, and over 800 million bales more.

MANAGER (mechanically). Sorry, Mr. Murphy.

VOICE. Listen! The loss of gas in the Texas Panhandle means millions of barrels of easily recoverable oil will stick in the sands—enough to supply the entire Nation for about 6 months!

MANAGER. Sorry, Mr. Murphy.

VOICE. Listen! It means the loss of enough gasoline to fill up every car in the country—26,000,000 in 1935—more than 40 times!

MANAGER (mechanically). Sorry, Mr. Murphy.

VOICE. Listen! In 1936, every 24 hours saw enough gas blown into the air and wasted in Rodessa field, Louisiana, to equal half the gas burned daily by all the domestic consumers in the United States!

MANAGER (rapidly, as if seeking to escape the facts). Sorry, Mr. Murphy. Sorry, Mrs. Jones. Sorry, Mr. Brown. Sorry, Mrs. Smith. Sorry, sorry, sorry, sorry, sorry, sorry, sorry——

(Music: In and up crescendo, drowning out speaker, then under.)

VOICE. America! Nature, in a couple of thousand years, can rebuild for us our eroded soil; give us a new protective forest and a grass mantle to take the place of that we foolishly destroy. But not so with oil. Our limited supply is irreplaceable. Once gone, forever gone. For its waste, you, not the producer, ultimately will pay in curtailed supply and higher prices. Today the oil industry estimates our known petroleum reserve at about 17 billion barrels—which we are using up far more rapidly than foreign nations are exhausting theirs. With no further discoveries at our present rate of consumption, 3,600,000 barrels a day, simple arithmetic reveals that our proven oil supply will last us only about 13 years!

SECOND VOICE. Fortunately, today, other States have joined Oklahoma in passing oil conservation laws—Arkansas, California, Kansas, Louisiana, Michigan, New Mexico, and Texas. Texas, too, through its gas conservation law of 1935 has reduced the gas waste in the Panhandle 90 percent; and Louisiana, through a similar law passed in 1936 has done much to eliminate waste in Rodessa.

VOICE. But there is still much to be done. For example, the fifth largest oil-producing State, Illinois, has not yet joined other States in passing oil-conservation legislation. Moreover, closer coordination of Federal and State responsibilities is needed. America, your oil industry has grown tremendously since Colonel Drake and his 69½ foot well. Today there are 370,000 wells, some going down more than 2 miles, producing a billion and a quarter barrels of oil a year, now supplying 30,000,000 automobiles. Without oil, our Nation, as we know it, could not exist! All the more reason, then, that we should lend an attentive ear to the words of the Secretary of the Interior, Harold L. Ickes, who said:

ICKES. The Congress and executive branch should not await the day of practical exhaustion before arriving at a national policy of oil conservation. If we are to conserve our oil supply so that it will meet to the fullest possible degree the needs of the Nation, we must do it while there is oil to conserve! I suggest, therefore, that the Congress and the executive branch might well address themselves to the question as to how * * * the Federal Government might aid the oil-producing States to husband the oil resources of America.

VOICE. Take heed, America. Oil is absolutely essential to your happiness and well-being! It is your Nation's heart blood. If you and your country are to prosper, oil must be conserved! Look to the future, America!

(Music: Up and out.)

VOICE. Here is a special announcement; listen carefully.

SECOND VOICE. Every listener to this program may have a free publication packed full of interesting information about our country's natural wealth. It is a publication which every man, woman, and child in America should have. Send for your free copy now! Address, What Price America, Washington, D. C., and a free publication will be sent to you at once. Let me repeat, if you want this important booklet, just send your name and address—a post card will do—to What Price America, Washington, D. C.

VOICE. Next week at this same time, the Department of the Interior in cooperation with the Columbia network, presents the twenty-fifth program of the series of What Price America. Listen next week to What Price America.

(Music: Up and out.)

ANNOUNCER. The script for this program was written by Lou Hazam. (Pronounced Has'-um.)

(Research—Hugh Russel Fraser.)

(Music—Leon Goldman.)

(Directed for Columbia by William N. Robson.)

Mr. COLE. I think that is all, Mr. Brown.

Mr. BROWN. Thank you Mr. Chairman.

Mr. COLE. Thank you very much.

STATEMENT OF FAYETTE B. DOW, WASHINGTON, D. C., REPRESENTING WESTERN PETROLEUM REFINERS' ASSOCIATION

Mr. COLE. We will hear you, Mr. Dow.

Mr. DOW. Mr. Chairman and gentlemen of the committee my name is Fayette B. Dow. I reside in Washington, D. C., and am Washington counsel for the Western Petroleum Refiners' Association.

The association has asked me to make a brief statement in opposition to H. R. 7372.

The Western Petroleum Refiners' Association was organized in 1912 and is the second oldest association of petroleum refiners in the United States. Its membership consists of the greater number of independent refiners, together with some of the larger refining companies, whose plants are located in the Mid-Continent field, chiefly in Oklahoma, Kansas, Texas, Louisiana, Arkansas, and some other States. Some of the members of the association are producers of substantial quantities of crude oil, others produce lesser amounts, while still others purchase substantially all of the crude oil which they refine.

First of all, the association desires to express its appreciation of the courtesy and thoroughness shown by the members of the Cole committee, as it is known throughout the industry, in this hearing and previous hearings through which the important facts with reference to the operations of the oil industry have been studied. The members of the association feel that what the industry is doing in production, refining, transportation, and marketing is so important as to warrant at all times the fullest knowledge on the part of the public and its representatives in Congress. They feel that the hearings held by the Cole committee have been very helpful in bringing about a better understanding of conditions as they exist in the oil industry.

Similarly the members of the association are appreciative of the Federal assistance that has been rendered and which has been expressed in the Interstate Oil Compact, the Connally Act, the taxation of oil imports, as well as the studies, surveys, and reports of various Federal agencies such as the Conservation Division, the Geological Survey, and the Bureau of Mines.

In discussing H. R. 7372 it would serve no useful purpose to restate in whole or in part the many statements of fact and forceful arguments which have been made against it. It will be sufficient to indicate the position of the members of the association and outline briefly some of the reasons why they are opposed to this bill and to Federal legislation of this character.

The crude oil which is refined by the members of the association is produced chiefly in the States of Oklahoma, Kansas, Texas, Louisiana, and Arkansas. The member refining companies are familiar with the regulatory activities of these States in the prevention of avoidable waste. They know that producing practices have been radically changed and improved in recent years and bear little resemblance to the open-flow practices of former years. This change and improvement has come about by greater knowledge of subsurface structures and of the factors which promote greatest recovery by the least wasteful methods. This knowledge has been embodied in regulatory orders, some of which have been contested in court cases, contests which have been followed in turn by amendments to the governing State statutes in the interest of sounder regulation, beneficial alike to the industry and the public. The progress which has been made is very substantial and no one, whether proponent of this bill or not, has attempted to deny it. On the contrary, the accomplishments already made under the present system in the improvement of producing practices and the reduction of avoidable waste are abundantly established by the testimony of many witnesses before this committee.

In opposing H. R. 7372 the members of the association are not opposing the regulation of production and are not condoning any waste that is reasonably avoidable. They are opposing the intervention of the Federal Government in a situation which is in process of being worked out constitutionally and in such a manner as to protect fully the public interest.

While H. R. 7372 purports to leave actual control with the States if they secure compliance with certain standards, no person who knows the history of Federal regulation can be deceived by the apparent recognition of State authority through which the bill gives an innocent approach to the assumption of production control by the Federal Government. If the bill merely added a second regulatory authority to one that already exists it could be condemned by the well-understood impossibility of serving two masters. But the bill does not do that. It says that where differences of regulatory judgment arise the Federal judgment shall prevail. The technique of crude-oil production is a relatively new, an experimental, a developing science. Much has been learned about it. Much remains to be learned. There are differences of opinion among the most experienced, best-informed men. But under the bill, if it should be a valid enactment, the findings and judgment of the Federal commissioner, whether right or wrong, will prevail.

The bill makes it easy for just that to happen. Before an order can be issued a hearing must be held, of course. At that hearing anyone who wants to testify will be heard. He may assert a fact without proving it. He may express an opinion without regard to his qualifications to express it. "The rules of evidence prevailing in courts of law or equity shall not be controlling" (sec. 15). There will be a large amount of testimony leading to divergent conclusions. Then the commissioner will make his findings and issue his order. Except as to very limited questions of law the door to a review by the courts is shut. "The findings of the commissioner as to the facts, if supported by substantial evidence, shall be conclusive" (sec. 15).

This is not a new method of delegating almost unlimited power to a board, a commission, or a commissioner.

In *National Labor Relations Board* v. *Waterman Steamship Corporation* (decided February 12, 1940) the Supreme Court reversed a judgment of the United States circuit court of appeals and directed that court to enforce the Board's order in its entirety. The circuit court had held that the Board's order was not supported by substantial evidence. The act of Congress creating the Board provides that "The findings of the Board, as to the facts, if supported by evidence, shall * * * be conclusive." After reviewing the testimony the Supreme Court unanimously held that there was a substantial evidence to support the Board's order and in the course of its opinion, speaking through Mr. Justice Black, said:

> It is of paramount importance that courts not encroach upon this exclusive power of the Board if effect is to be given the intention of Congress to apply an orderly, informed, and specialized procedure to the complex administrative problems arising out of industrial disputes. As it did in setting up other administrative bodies, Congress has left questions of law which arise before the Board—but not more—ultimately to the traditional review of the judiciary. * * *
>
> The court of appeals' failure to enforce the Board's order resulted from the substitution of its judgment on disputed facts for the Board's judgment—and power to do so has been denied the courts by Congress. Whether the court would reach the same conclusion as the Board from the conflicting evidence is immaterial and the court's disagreement with the Board could not warrant the disregard of the statutory provision of authority set up by Congress.

In *Federal Communications* v. *The Pottsville Broadcasting Company* (decided January 29, 1940) the Supreme Court had before it the question whether the Court of Appeals of the District of Columbia had exceeded its judicial authority in issuing a writ of mandamus to the Commission. In holding that the court of appeals was in error in the scope of its direction to the Commission, the Supreme Court, speaking through Mr. Justice Frankfurter, discussed in broad terms the differences between powers of judicial review in the usual court litigation and in the field of administrative agencies.

Off of the record, please.

(After informal discussion off of the record:)

Mr. Dow. The court said:

> * * * This was not a mandate from court to court but from court to an administrative agency. What is in issue is not the relationship of Federal courts *inter se*—a relationship defined largely by the courts themselves—but the due

observance by courts of the distribution of authority made by Congress as between its power to regulate commerce and the reviewing power which it has conferred upon the courts under article III of the Constitution. A review by a Federal court of the action of a lower court is only one phase of a single unified process. But to the extent that a Federal court is authorized to review an administrative act, there is superimposed upon the enforcement of legislative policy through administrative control a different process from that out of which the administrative action under review ensued. The technical rules derived from the interrelationship of judicial tribunals forming a hierarchial system are taken out of their environment when mechanically applied to determine the extent to which congressional power, exercised through a delegated agency, can be controlled within the limited scope of "judicial power" conferred by Congress under the Constitution.

Courts, like other organisms, represent an interplay of form and function. The history of Anglo-American courts and the more or less narrowly defined range of their staple business have determined the basis characteristics of trial procedure, the rules of evidence, and the general principles of appellate review. Modern administrative tribunals are the outgrowth of conditions far different from those. To a large degree they have been a response to the felt need of governmental supervision over economic enterprise—a supervision which could effectively be exercised neither directly through self-executing legislation nor by the judicial process. That this movement was natural and its extension inevitable was a quarter century ago the opinion of eminent spokesmen of the law. Perhaps the most striking characteristic of this movement has been the investiture of administrative agencies with power far exceeding and different from the conventional judicial modes for adjusting conflicting claims—modes whereby interested litigants define the scope of the inquiry and determine the data on which the judicial judgment is ultimately based. Administrative agencies have power themselves to initiate inquiry, or, when their authority is invoked, to control the range of investigation in ascertaining what is to satisfy the requirements of the public interest in relation to the needs of vast regions and sometimes the whole Nation in the enjoyment of facilities for transportation, communication and other essential public services. These differences in origin and function preclude wholesale transplantation of the rules of procedure, trial and review, which have evolved from the history and experience of courts. Thus, this court has recognized that bodies like the Interstate Commerce Commission, into whose mold Congress has cast more recent administrative agencies, "should not be too narrowly constrained by technical rules as to the admissibility of proof," *Interstate Commerce Commission* v. *Baird*, 194 U. S. 25, 44, should be free to fashion their own rules of procedure and to pursue methods of inquiry capable of permitting them to discharge their multitudinous duties. Compare *New England Divisions case*, 261 U. S. 184.

To be sure, the laws under which these agencies operate prescribe the fundamentals of fair play. They require that interested parties be afforded an opportunity for hearing and that judgment must express a reasoned conclusion. But to assimilate the relation of these administrative bodies and the courts to the relationship between lower and upper courts is to disregard the origin and purposes of the movement for administrative regulation and at the same time to disregard the traditional scope, however far-reaching, of the judicial process. Unless these vital differentiations between the functions of judicial and administrative tribunals are observed, courts will stray outside their province and read the laws of Congress through the distorting lenses of inapplicable legal doctrine.

By amendment to Federal Communications Act in 1930 Congress had terminated "the administrative oversight of the court of appeals" and in "sharp contrast with the previous grant of authority," the court was restricted "to a purely judicial review."

The limiting language of the amendment was as follows:

Provided, however, That the review by the court shall be limited to questions of law and that findings of fact by the Commission, if supported by substantial evidence, shall be conclusive unless it shall clearly appear that the findings of the Commission are arbitrary or capricious.

The court's judgment was made final subject to review by the Supreme Court of the United States upon writ of certiorari.

The statute did not define the "questions of law" which might be reviewed by the court but Mr. Justice Frankfurter indicates at least some of the questions which are appropriate for judicial decision by quoting from a previous decision of the Supreme Court.

Now, I quote this because as I said, a little later in the paper it shows the very limited range of review by the courts from an order of such a commissioner as would be put in authority by the bill now before us.

> "Whether the Commission applies the legislative standards validly set up, whether it acts within the authority conferred or goes beyond it, whether its proceedings satisfy the pertinent demands of due process, whether, in short, there is compliance with the legal requirements which fix the province of the Commission and govern its action, are appropriate questions for judicial decision. *Radio Commission* v. *Nelson Bros. Company* 289 U. S. 266, 276."

In concluding its opinion in the *Pottsville Broadcasting case* the Court says:

> * * * The present case makes timely the reminder that "legislatures are ultimate guardians of the liberties and welfare of the people in quite as great a degree as the courts." *Missouri, Kansas & Texas Railway Company* v. *May,* 194 U. S. 267, 270. Congress which creates and sustains these agencies must be trusted to correct whatever defects experience may reveal. Interference by the courts is not conducive to the development of habits of responsibility in administrative agencies. Anglo-American courts as we now know them are themselves in no small measure the product of a historic process.

The reasons against superseding State regulation by Federal regulation have been well stated by other witnesses and I shall not repeat them. But I want to point out that the effect of these two recent decisions of the Supreme Court of the United States, so far as H. R. 7372 is concerned, is this: The Commissioner of the Office of Petroleum Conservation, or "any associate commissioner, deputy commissioner, agent, or agency designated by the Commissioner, with the approval of the Secretary"—section 3 (a) (2—must apply the legislative standards set up in the bill, act within the authority conferred, and satisfy the pertinent standards of due process. If he does that his findings of fact and his judgments are final.

In the early stages of Federal regulation under such an act as H. R. 7372 contemplates there might be some recognition of the rights of the States and some deference to the judgments of their regulatory authorities. But the history of Federal regulation is that, as time goes on, its powers are amplified and the scope of its activities are extended. Ultimately the Federal Government dominates the field and State authority dwindles in effectiveness and importance.

So, the committee is confronted with the ultimate and inevitable consequences of an act which would assert a Federal power to control crude oil production even though that assertion may carry the expression of a present desire to cooperate with the States.

The principal oil-producing States have expressed their opposition to this bill and the opposition of the oil industry is substantially unanimous. The decisions of the Supreme Court above referred to do not merely limit the reviewing powers of the courts. They remind the law-making bodies that "the legislatures are ultimate guardians of the liberties and welfare of the people in quite as great a degree as the courts." This can only mean that if the Federal Congress does not desire to set up an all-powerful Federal agency which will ultimately supersede the jurisdiction of the States, it must see to it that it does not do so.

Thank you, Mr. Chairman.

Mr. Cole. Thank you.

The committee will take a recess until 2:15 p. m.

(Thereupon at 12:40 p. m., a recess was taken until 2:15 p. m., of the same day.)

AFTERNOON SESSION

(The committee reassembled, pursuant to the taking of a recess, Hon. William P. Cole, Jr. (presiding).)

Mr. Cole. The committee will be in order.

We will hear you, Judge Hunter.

STATEMENT OF J. C. HUNTER, ABILENE, TEX., PRESIDENT, MID-CONTINENT OIL & GAS ASSOCIATION

Mr. Hunter. My name is J. C. Hunter. I am an independent oil producer residing at Abilene, Tex. I have been engaged in the oil-producing business in Texas for about 20 years. I am president of the Mid-Continent Oil & Gas Association.

Would you like to have my other affiliations in the record, Mr. Chairman?

Mr. Cole. All right.

Mr. Hunter. I am also a director of the Independent Petroleum Association of America; director and member of the executive committee, American Petroleum Institute; I was formerly president and now am a director and member of the executive committee of the West-Central Texas Oil & Gas Association——

Mr. Cole. And a member of the special Committee of Thirty-six?

Mr. Hunter. Yes; I served as a member of the Committee of Thirty-six of the Independent Petroleum Association of America.

I have been requested to conclude the presentation of evidence given before your committee at this time by the various representatives and groups in the industry, with a brief summary of our evidence and position.

On behalf of the organization of which I am president, and I think as a statement of the views of the industry generally, I wish to express appreciation to the committee for its open-minded approach toward a consideration of the problems involved and for the fairness that has been shown in the conduct of these hearings. This committee has contributed materially to the efforts of the industry and the States for conservation through its earlier hearings, studies, and reports, and through its approval of measures for Federal cooperation authorized by the Connally Act and congressional consent to the interstate oil compact. These contributions are appreciated.

In this hearing, the industry has sought to be of such aid to your committee as it could by a presentation of pertinent facts and a frank expression of opinion born of its experience in the gradual process of achieving conservation of oil and gas. It stands ready to be of such assistance as it can in aiding the committee to arrive at sound conclusions and recommendations.

It seems clear from the report of the National Resources Committee, the report of the Federal Power Commission, from which the Chairman read at the hearing on February 8, the work of the Interior Department, and the provisions of H. R. 7372 that it is the definite objective of some Federal bureaus and agencies in Washington to secure Federal legislation "completely controlling the production, conservation, and wastage of petroleum, natural gas, and other hydrocarbons, in the United States." Conclusion to report of Chief Engineer Brown to the Federal Power Commission. H. R. 7372 clearly vests in the Federal Commissioner authorized thereby a full measure of such control. If the purposes in mind are not obtained through subservient State conservation agencies, they are to be accomplished through regulations of the Commissioner himself. Violations of his regulations and the act are punishable by heavy penalties and imprisonment, and afford grounds for injunctive relief. If this bill should not bring about the complete Federal control desired, the objective involves the enactment of such other legislation as might be necessary to this end.

This objective and its accomplishment the industry vigorously opposes. And such opposition appears to be unanimous.

I present the following summary:

INDUSTRY BELIEVES IN CONSERVATION

We believe in the conservation of our oil and gas resources. This involves the adoption of practices and regulations that will bring about the greatest ultimate economic recovery of these resources. This does not imply a hoarding of such resources for the future, but their production under such conservation practices and regulations in response to the present and future current demand for them and their products. Through research and experimentation and in practical operations the industry has sought and now seeks to increase technological knowledge; and as its knowledge has increased it has employed improved methods as a means of preventing waste and increasing ultimate recoveries. It has sponsored the enactment and enforcement of laws designed to further conservation and has cooperated with State conservation agencies in securing their application and enforcement.

CONSERVATION A STATE FUNCTION

We believe that the regulation and control of the production of oil and gas as a means of conserving these resources is a function of the States and not of the Federal Government; that under the Constitution of the United States, the Federal Government is one of delegated powers only, and that no power is delegated to the Federal Government thereunder to regulate or control the production of oil or gas, or for that matter, of farm products, livestock, minerals, or any other product; that to centralize control and regulation of such production in any Federal agency would result in a complete change in our form of Government, making the Federal Government in effect one of general powers and effectively undermining the whole principle of State sovereignty and the control by the States of local matters; that centralization of control in the hands of a Federal commissioner would increase the burdens of the industry, impair the freedom and efficiency and threaten the continuance of free, private enterprise, stifle wildcat exploration, and retard the building up of reserves; that Federal control would complicate, duplicate, make more expensive, more arbitrary, and less effective, the whole machinery of conservation; that Federal control as provided for in this proposed legislation would make it possible for a single government official arbitrarily to dominate a great basic industry and would precipitate serious economic repercussions in this and other industries. We think that the industry and the States can do a better job of conservation of these resources in the United States than can any Federal agency; that the record of their progress demonstrates their fitness, and clearly indicates that they should be permitted to carry forward the program thus begun and in which they have experience.

NATIONAL DEFENSE NO JUSTIFICATION FOR FEDERAL CONTROL

Federal control of the production of oil and gas for conservation purposes is not essential to the national defense, cannot be legally supported on this basis, and would not further such objective. The record discloses that the known reserves of the nation are constantly increasing and that progress in their conservation is rapid and sustained. The industry can readily supply without waste any requirements of the Army and Navy and for all civilian uses during war. The presence of other fuel yielding resources convertible into oils at only slightly increased prices, such as shales and coal, in known quantities sufficient to meet the fuel needs of the Nation for thousands of years, completely negatives any basis for the claim that the national defense requires Federal control of oil and gas production. The Government, within existing constitutional limitations, can provide from its public domain and by purchase of oil or oil land sufficient supplies to meet its demands for national defense for any period of time.

Witnesses from the Army and Navy appearing before this committee in November 1939, testified that during the World War the oil industry adequately supplied the oil needed for national defense. This was at a time when our developed reserves were very much smaller than now exist, and when the principles of conservation now in operation were wholly unknown.

INDUSTRY'S REMARKABLE ACHIEVEMENTS IN CONSERVATION

The record of achievements in the conservation of oil and gas is nothing short of remarkable. In its present phase, this conservation effort is only about 15 years old.

Prior to that time little was known of reservoir conditions in an oil and gas pool and the possibilities for conservation inherent in reservoir control. There was no body of conservation law on which to proceed. In the interim, one by one the States have enacted reasonably adequate conservation laws; these laws and the administrative regulations thereunder have been reviewed by the courts, and their validity and limits established. By research and experimentation in reservoir control, and by the use of oil fields as laboratories in practical operation, knowledge has been advanced. Conservation practices have been adopted by the industry in keeping with this growth of knowledge. Through trial and error, constant progress has been made. It has taken time for the industry, the public, the legislatures, the administrative bodies, and the courts to learn the lessons of conservation and the character of laws and regulations that could be practically and constitutionally applied. Today the industry and the general public in most of the oil-producing States have become convinced of the necessity for conservation and for adequate laws in its accomplishment. The industry is practicing conservation methods in advance of those provided by public regulation. In this short period of time, as knowledge has advanced and experience has demonstrated their need, reasonably adequate conservation laws, in the light of present conditions, have been enacted in Oklahoma, Texas, New Mexico, Kansas, Louisiana, Arkansas, Michigan, Mississippi, and Colorado, in which States are located 74.08 percent of the Nation's reserves.

In addition, through a cooperative program of the operators and the State under inadequate conservtaion laws, real progress in conservation has been made in California, which has 18½ percent of the Nation's reserves.

Briefly, some of the achievements in conservation during this short period of time are: The gradual development of a conservation-conscious industry and public; the enactment of conservation laws; the training, partly by trial and error, of conservation administrative agencies; court reviews that have held valid conservation laws and regulations and more clearly defined the limits of administrative authority; the acquisition through research, experimentation, and practical operation of fields under conditions of reservoir control of a vast amount of knowledge concerning the behavior of the oil and gas reservoirs and of conservation possibilities and practices; through the expenditures of millions of dollars upon engineering and engineering research, well completions are now made at depths, in thin sands, and under conditions that would have been impossible only a few years ago, thus opening large reserves hitherto not possible of recovery, and making it possible to supply the requirements for oil under conditions of sharp reservoir control in our oil fields, which is the primary factor in waste prevention; the use of electrical logging, gun perforating, setting of packers, and the use of squeeze cementing and other techniques to reduce gas-oil and water-oil ratios have become routine; waste from blow-outs and cratering have been reduced to a minimum; wide spacing and increased reserves have been utilized in bringing about reservoir control by reducing the rate of recovery from the field, thus preventing premature encroachment of water and by-passing of oil by gas and enabling the fuller utilization of the natural energies of the pool. This program of conservation carried on by the industry in cooperation with and under regulations of the State conservation agencies has resulted in reducing the underground waste of oil from an extimated 25 percent to 30 percent under open-flow methods formerly employed to about 1 percent for the Nation under present methods of control and operation.

While all avoidable waste has not been prevented, we feel that progress made in actual waste prevention has been truly remarkable; and while there is much to be accomplished, the history of progress in the brief period involved leads to the belief that this progress will continue in those States now having conservation laws; and, furthermore, the history of progress in the adoption of conservation laws, successively by States, leads us to expect that Illinois and California will within a reasonable time enact and administer suitable laws. The process of education requires time. We cannot expect the public nor the legislatures in new oil producing States to be fully advised in the beginning. Under the American democratic way, this delay must be expected. But this is no reason for the abandonment of the division of authority between the States and the central Government, and the transfer to the latter of authority in the field of production regulation, heretofore always recognized by the Congress and the courts to be the exclusive field of activity by the States.

NO SERIOUS NOR ALARMING AVOIDABLE WASTE NOW EXISTS

The record before you fully supports the outline of progress which I have presented. This record further discloses that, despite the complications of the problem, the progress has been so great and the indications and reasonable expectations for further progress are so certain in still isolated cases of wasteful practices that there is no present cause for alarm or for a complete change in conservation machinery at this time. The goal is to improve and strengthen the existing machinery, and to extend its use to other States.

A review of the evidence presented to you in November 1939, by the Government engineering witnesses does not disclose any serious conditions of waste. The principal charges of waste related to that of oil underground. On February 8, 1940, hear the conclusion of the hearings at which the Governors and conservation agencies of the States presented their evidence, the Secretary of the Interior filed reports by the Bureau of Mines, the Geological Survey and the Petroleum Conservation Division presenting evidences of above-ground waste of gas. This constituted a definite shift of position from under-ground oil waste to above-ground gas waste on the part of the proponents of Federal control.

With regard to the underground waste of oil, the witnesses for the industry estimate that if present practices were continued through the remaining productive life of our reserves, such practices might render about 1 percent of these reserves unrecoverable. This represents less than the amount required to supply our national demand for 60 days. In the light of the estimates by Bureau of Mines witnesses that we have shale and coal sufficient to supply our fuel needs for 2,000 years, this waste presents no alarming social or economic consequences and no emergency and no crisis.

The reports regarding gas wastage filed by the Secretary of the Interior on February 8 seem to be based on the theory that all gas vented to the air is waste. Perhaps this is true in a theoretical sense; but as pointed out by the earlier testimony of the Bureau of Mines' engineers and that of the industry's engineers, a very great part of this is not avoidable waste under practical economic operations for the production of oil. Most of this gas has performed its primary service in connection with the production of oil, cannot be economically or profitably returned to the reservoir, and there is no available market for it. The supplementary reports filed February 8 call attention to high gas-oil ratios in certain fields, and treat as waste all gas produced with oil and dissipated to the air. Engineers for the industry point out that gas-oil ratios are but one of many yardsticks of waste; that the gas-oil ratio of a well or pool, when unrelated to the physical characteristics of the reservoir, is not a valid measure of waste; and that a 10,000-foot ratio in one reservoir might well indicate a higher degree of efficiency than a 500-foot ratio in another pool. Furthermore, attention is called to the difficulties attending the production of oil from pools wherein the oil zones are thin and in direct contact with free gas, rendering it impossible to recover the oil at low gas-oil ratios. They indicate that the lowest gas-oil ratios for a pool need not necessarily represent the lowest degree of waste, but such can diminish rather than increase the percentage of oil recovery.

The industry's engineering witnesses show that a large part of the gas, referred to in the supplemental reports filed February 8, as vented to the air comes from high-pressure distillate pools located in te Gulf coast of Texas and Lonisiana. These fields are recent discoveries due to improved technique in drilling and completing at great depths into reservoirs containing large gas caps in contact with thin segments containing oil. The location of these reservoirs and the completion of wells in them is a real achievement in engineering. The technique of reinjecting stripped gas into its indigenous horizon is an expensive operation still in the process of being perfected. For example, the Bureau's supplemental report refers to the Old Ocean Field in Brazoria County, Tex., and states that during the first 10 months of 1939, 220,000,000 cubic feet of gas were blown into the air daily. This constitutes approximately one-half of the total avoidable gas waste in Texas today. Mr. Elwood Fouts, attorney for the principal operators in the pool, in his statement before you on February 9, referred to conditions in this pool, and stated that special pressure equipment is being installee at great expense and that likely before the completion of your report all of the gas produced in the field will be returned to the sands. This is illustrative of the technological advances resulting from expensive research and experimentation that will make possible a great reduction in the volume of gas to be vented into the air. The situation described in these fields is for the most part temporary, and will be met with advances in technological knowledge. For example, in the supplemental report of the Bureau of Mines, it is shown that the percentage of gas in Texas used for repressuring and recycling has increased during the period 1936 to 1939 from 1.3 percent to 11.3 percent. The major part of this is in the high-pressure "distillate" fields in the Gulf coast, where such operation is feasible.

It has been shown that the primary function of gas in an oil field is to act as a propelling force in the production of oil, and that the subsequent utilization for the manufacture of gasoline and the delivery for sale of residue gas or its reinjection into the reservoir are not always technically feasible or commercially possible. When there is a market it is sold, as it stands to reason that any operator would rather sell his gas than burn it in flares. If the gas cannot be sold the operator must decide among returning it to the reservoir, burning it in flares, venting it to the air, or shutting down the wells. As pointed out above in a constantly increasing number of cases gas is being returned to the reservoirs, but often the initial investment and subsequent operating costs make this economically impossible. In some cases the reinjection of gas would actually do harm to the future production of oil. Shutting down all oil wells when the gas cannot be utilized and must be burned or vented into the air involves not only innumerable legal and other complications, but would reduce the production of oil far below the current needs of the country with consequent increase in price of oil products to the consumer.

CONSIDER ILLINOIS IN ITS RIGHT PROPORTIONS

In considering this whole subject, it is important that things be kept in their right proportions. Frequent references have been made to Illinois, and to the need for Federal control in order to meet the Illinois situation due to the absence of conservation legislation in that State. According to the figures on oil reserves given by Mr. Robinson, Illinois has a reserve of 430,000,000 barrels, or 2½ percent of the reserves of the Nation. The national daily demand for crude in 1939 was approximately 3,500,000 barrels. If it should be assumed that no law will be enacted in Illinois, that as much as 25 percent waste is going on there now—which, of course, is not conceded—and that no improvement will occur during the life of these reserves, the total quantity lost would be sufficient to supply the national demand for the period of 31 days, or 1 month only. Similar comparisons of the other quantitative estimates of waste given show that they are not in any sense alarming. Imposing Federal control over the oil-producing industry to prevent this relatively insignificant waste, in my opinion, would be trading barrels of democracy for pints of gasoline.

While the high current production of oil in Illinois is causing dislocation by displacing oil from other States, we feel confident that this condition is temporary and will be corrected either by the enactment and enforcement of a State conservation law or by natural decline in production.

The history of the conservation movement indicates clearly that Illinois will enact and administer conservation laws, and that conservation regulations and practices will progress in the other States. There is no emergency, no crisis, that makes desirable or necessary any shift of conservation control from the States to the Central Government. For reasons heretofore stated we firmly believe that Federal control would be less effective if adopted.

COMPULSORY UNIT OPERATION NOT NECESSARY

There has been evidence introduced by Government witnesses in favor of unit operation of oil fields, and the report of the Federal Power Commission strongly favors such mode of operation. The inescapable implications are that compulsory unit operation should be adopted and applied, and in fact is necessary. We recognize that theoretically unit operation is the ideal physical mode of operating oil fields. In numerous fields unit operation has been brought about by a single ownership or by agreements among the several owners. The papers by Mr. Winston Henry, Mr. Robert E. Hardwicke, Mr. George A. Hill, and Mr. John M. Lovejoy point out the practical and legal difficulties and the insuperable barriers to compulsory unitization, whether under State or Federal laws. There are many difficulties which are encountered in efforts to secure voluntary unitization, among which are the diversity of property interests, the lack of sufficient knowledge of underground reserves and conditions in the early stages of a field's development, and differing financial abilities of the owners. Besides, where proper allocation of allowables and reasonable and uniform spacing of wells are provided, with effective control of the rate of withdrawal of both oil and gas from the reservoir, there are obtained most of the desirable features and practices existing under unit operation; and in addition, the several owners are able to retain and operate their own properties. This enables each operator to apply his own ideas as to equipment, labor, methods, accounting, economies, and so forth, and gives greater freedom for each person in carrying out his own ideas as to what is the best and cheapest method of operating, within the limits of general operating conditions laid down for the field with regard to well spacing, gas-oil ratios, and so forth. It is apparent that under compulsory unit operation the larger companies, because of their larger holdings in the pool, would generally operate the unit, and the small man would be deprived of the operation of his own property.

The adoption of rules for fair and equitable allocation of allowables between wells and properties and for uniform spacing does away with, most of the difficulties incident to the "rule of capture" theory. Thus both equity and conservation are obtained under private control and operation by each owner of his property, under proper exercise of the police power of the State, without unit operation.

MARKET-DEMAND CONSIDERATION IS ESSENTIAL TO CONSERVATION AND IS NOT PRICE FIXING

Concern has been indicated by at least one member of your committee that the provision in State conservation laws for limitation of production to market demand has been or may be used purely as a stabilization and price fixing technique. This subject has been fully discussed by Mr. Elwood Fouts, Mr. H. B. Fell, and Mr. R. E. Hardwicke. A careful study of their papers will be convincing, I believe, that the limitation of production to market demand is necessary in order to prevent the actual physical waste of oil underground and through unnecessary storage above ground and is also necessary to insure ratable production and ratable participation in the markets by all producers in a field. It is also essential to any fair allocation between fields. These papers are convincing that limitation of production to demand is not a price-fixing device, although it does have the effect of preventing wide fluctuations in price due to recurring periods of oversupply and undersupply. The Supreme Court has held that it is not price fixing. This is essential to the maintenance on production of the stripper wells, and is also of benefit to the consumer. Figures submitted in Mr. Fell's paper show that during the period this method has been in use, prices of crude oil and products have actually declined, and have also declined relative to the price of all other commodities.

It is recognized that there is a relation between restriction of production and price, however the restriction may be accomplished and irrespective of the motive behind it. But so long as the supply is not curtailed below demand, there is no raising of price. Of course, if the concept were abused by reducing production below demand over any substantial period, the price would be raised. This would constitute an abuse of the concept.

Such abuse cannot be continued over any long period or recur often. There are several natural corrective forces to prevent such: (1) The pressure of large reserves for an outlet will prevent such. Figures submitted by Mr. Fell show that the production has been above the demand as estimated by the Bureau of Mines during all of the period of its estimates except during 1938, when a deliberate effort was made by conservation agencies to absorb undue accumulation of storage oil in 1937. Producers are pressing the conservation agencies for higher allowables. (2) If the prices are raised sharply or over a substantial period by such curtailment, the consumers will exert pressure on the conservation authorities and use political force to prevent the continuance or recurrence of the practice. (3) The pressure from the two groups hold forth the constant threat of corrective legislation. (4) If abused long, producers and refiners who are short of production will take legal action in the courts to set aside the orders, and will be successful in their efforts. (5) The activities of this committee in calling attention to the results of any possible abuse of the power may well have a corrective effect. (6) Competition between Staes for increasing position in the Nation's markets will work in the same direction.

Hence, it is not believed that there is danger that the power to limit production to market demand is likely to lead to any real or serious abuse. Its use is essential to any practical program of conservation and the continuance of equity between operators.

FEDERAL GOVERNMENT COOPERATION

While the industry is of the opinion that under our system of government there is no place for the exercise by the Federal Government of control of production of oil and gas, and that an effort by it to do so would be subversive of our governmental principles and would not aid but hinder conservation, we do believe that there is a field for helpful cooperation by the Federal Government with the conservation agencies of the States and the industry in the adoption of improved practices and the enforcement of conservation laws and rules. Congress has the power to regulate interstate and foreign commerce. In the exercise of this power it can aid enforcement of the State conservation laws and regulations by such means as the Connally Act, and can also be helpful in the control of imports. Furthermore, consent to the formation of the interstate oil compact enables progress by the slow but sure process of mutual education and cooperation. The Bureau of Mines, the Geological Survey, and other agencies of the Government can be of great service in the dissemination of knowledge through their studies, researches, surveys, and publications, and particularly in the ascertainment and publication of estimates of reasonable market demand. There is a great field here for the advance of technology and conservation practices. We feel that these services can be provided under existing law. If this committee feels that more explicit direction from Congress is desirable, we suggest that in the funds appropriated for the Interior Department or other Government departments there be specific amounts designated for these purposes.

We recognize that despite the progress made along a hard road of trial and error in which many mistakes have been made, much remains to be done. We believe progress will be more rapid and more secure and lasting if made along the lines already set, utilizing the agencies and experience we have and extending them, with all forces employed in cooperating for their success, than by any shift to centralized control.

Mr. COLE. Judge, in dealing with Illinois, you have adopted the figures of Mr. Robinson as to the estimates of reserves in that State of 430 million barrels?

Mr. HUNTER. Yes, sir. I took his figures. I do not know how much oil they have. And, that was the figure which was put into our record. It has been estimated, as you know, as high as 600 million barrels.

Mr. COLE. 617 million, I think.

I think that is all, Judge.

This concludes all of the statements I believe, to be presented by your associations, the Independent Petroleum Association and the American Petroleum Institute. Is that correct?

Mr. HUNTER. I believe that covers all of them, Mr. Chairman.

Mr. COLE. The committee wants to thank the associations for the very helpful way in which they have presented this problem to us; the expense and time that you have gone to. We appreciate it very much.

At this point, I want to place in the record a letter dated February 24, 1940, from the Director of the Geological Survey to the chairman of the subcommittee (Mr. Cole). When their witnesses were before us I requested Mr. Miser, to submit a supplemental statement bringing his estimates up to date covering the year 1939. As you gentlemen recall his figures covered from 1934 to 1938. That work has just been completed and will be inserted in the record at this point. If anyone wishes to see it it is available here.

(The letter and the report above referred to are as follows:)

DEPARTMENT OF THE INTERIOR,
GEOLOGICAL SURVEY,
Washington, February 24, 1940.

HON. WILLIAM P. COLE, Jr.,
Chairman, Petroleum Investigation Subcommittee,
Committee on Interstate and Foreign Commerce,
House of Representatives.

MY DEAR MR. COLE: On November 6, 1939, during the hearings before your subcommittee on H. R. 7372, you requested Mr. Miser of the Geological Survey to submit a supplement to the report on "Outstanding features of oil-field development and petroleum geology in the United States, 1934–38," covering the additional year 1939.

In compliance with your request, there is transmitted herewith the desired supplemental report for 1939.

Sincerely yours,

W. C. MENDENHALL, *Director.*

OUTSTANDING FEATURES OF OIL-FIELD DEVELOPMENT AND PETROLEUM GEOLOGY IN THE UNITED STATES, 1939

(By the Geological Survey, U. S. Department of the Interior) [1]

This report summarizes the oil-field developments, oil production, reserves, and some features of petroleum geology of the United States for the year 1939. It supplements the Geological Survey's report on "Outstanding features of oil-field development and petroleum geology in the United States, 1934–38," which was published on pages 98–148 of Petroleum Investigation—Hearing before a subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, Seventy-sixth Congress on House Resolution 290 and H. R 7372, November 6, 7, 8, and 10, Washington, D. C., 1939.

PRODUCTION

The production of crude petroleum in the United States in 1939, according to preliminary figures of the Bureau of Mines, United States Department of the Interior, was 1,264,256,000 barrels. This amount exceeds slightly the domestic production of 1,214,355,000 barrels in 1938 and is a little less than the record domestic output of 1,279,160,000 barrels in 1937. The 1939 oil output of the United States represents almost 61 percent of the world's production (about 2,080,000,000 barrels) for 1939.

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[1] This report has been written by H. D. Miser with the collaboration of D. A. Andrews, Paul Averitt, A. A. Baker, N. W. Bass, W. H. Bradley, R. P. Bryson, C. H. Dane, A. M. Farrell, C. B. Hunt, M. M. Knechtel, W. G. Pierce, O. C. Postley, R. W. Richards, G. B. Richardson, and W. P. Woodring.

In 1939 Nebraska was added to the list of the oil-producing States and substantial commercial production was first discovered in Mississippi.

Table 1 shows, by States, the production of petroleum in the United States for the years 1938–39. In 1939 Texas, California, and Oklahoma led the producing States in the order here named, just as they did in the years 1935–38. The most notable change in the rank of the individual States from 1938 to 1939 was the rise of Illinois to fourth place in 1939, from seventh place in 1938, passing Louisiana, Kansas, and New Mexico, which dropped from fourth, fifth, and sixth places in 1938 to fifth, sixth, and seventh places, respectively, in 1939.

TABLE 1.—*Production of crude petroleum by States* [1]

	1938	1939 [2]		1938	1939 [2]
	Barrels	*Barrels*		*Barrels*	*Barrels*
Arkansas	18, 180, 000	21, 143, 000	New Mexico	35, 759, 000	37, 323, 000
California	249, 749, 000	224, 354, 000	New York	5, 045, 000	5, 098, 000
Colorado	1, 412, 000	1, 391, 000	Ohio	3, 298, 000	3, 156, 000
Illinois	24, 075, 000	95, 302, 000	Oklahoma	174, 994, 000	160, 072, 000
Indiana	995, 000	1, 443, 000	Pennsylvania	17, 426, 000	17, 337, 000
Kansas	60, 064, 000	60, 723, 000	Texas	475, 850, 000	484, 527, 000
Kentucky	5, 821, 000	5, 581, 000	West Virginia	3, 684, 000	3, 580, 000
Louisiana	95, 208, 000	93, 869, 000	Wyoming	19, 022, 000	21, 417, 000
Michigan	18, 745, 000	22, 799, 000	Others	82, 000	[3] 73, 000
Mississippi		107, 000			
Montana	4, 946, 000	5, 961, 000	Total	1, 214, 355, 000	1, 264, 256, 000

[1] Bureau of Mines, U. S. Department of the Interior.
[2] Subject to correction.
[3] Includes Missouri, Tennessee, and Utah.

About one-third of the total crude petroleum produced in the United States in 1939 came from the 12 fields that produced more than 10,000,000 barrels each during the year (see table 2); 6 of these fields are in California, 2 are in Illinois, 1 is in Oklahoma, 2 are in Texas, 1 of which extends into Louisiana and Arkansas, and 1 embraces adjoining parts of Pennsylvania and New York.

TABLE 2.—*Production of crude petroleum in the 12 fields that produced more than 10,000,000 barrels each in 1939* [1]

	Year of first recordedproduction	1939	Total since discovery
		Barrels	*Barrels*
1. East Texas	1930	146, 900, 000	1, 431, 900, 000
2. Salem, Ill	1938	50, 200, 000	52, 800, 000
3. Oklahoma City, Okla	1929	35, 700, 000	485, 700, 000
4. Wilmington, Calif	1937	31, 100, 000	79, 500, 000
5. Rodessa, La., Ark., Tex	1935	20, 400, 000	103, 200, 000
6. Kettleman Hills, Calif	1928	19, 600, 000	221, 600, 000
7. Midway-Sunset, Calif	1900	18, 900, 000	876, 900, 000
8. Louden, Ill	1937	18, 400, 000	20, 200, 000
9. Bradford-Allegany, N. Y.-Pa	1871	18, 100, 000	421, 100, 000
10. Long Beach, Calif	1921	17, 000, 000	638, 000, 000
11. Ventura Avenue, Calif	1926	12, 900, 000	202, 100, 000
12. Santa Fe Springs, Calif	1921	10, 100, 000	457, 100, 000

[1] Data from Oil and Gas Journal, vol. 38, No. 37, p. 78, Jan. 25, 1940, and report by Geological Survey on "Outstanding features of oil field development and petroleum geology in the United States, 1934-38", in petroleum investigation—Hearing before a subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 76th Cong., on H. Res. 290 and H. R. 7372, Nov. 6-10, p. 100, 1939.

RESERVES

The proved reserves of petroleum in the United States at the beginning of 1939, according to the different estimates, ranged from 14 to 17.5 billion barrels. Thus far, February 24, 1940, only two estimates of reserves at the beginning of 1940 are available. One of these, namely, that of the Oil Weekly, places the total reserves at 18,751,050,000 barrels and the other by the Oil and Gas Journal places the total reserves at 19,687,379,000 barrels. Table 3 shows, by States, the estimates of known reserves as published in these two journals at the beginning and end of 1939 and also the reserves as estimated by the American Petroleum Institute at the beginning of 1939.

TABLE 3.—*Estimates of proved reserves of petroleum in the United States at beginning and end of 1939*

[Thousands of barrels of 42 gallons]

	Jan. 1, 1939				Jan. 1, 1940	
	American Petroleum Institute (Estimate subject to revision)	Oil and Gas Journal	Oil Weekly	Oil and Gas Journal (Revised estimate)	Oil and Gas Journal	Oil Weekly
Arkansas	188, 246	138, 838	211, 760	174, 221	310, 156	300, 250
California	3, 188, 763	2, 909, 261	2, 945, 715	3, 171, 450	3, 447, 622	3, 482, 500
Colorado	17, 713	24, 429	18, 215	20, 766	21, 765	16, 750
Illinois	242, 847	214, 470	265, 000	280, 255	617, 528	615, 000
Indiana	6, 031	3, 242	3, 600	12, 300	20, 944	17, 500
Kansas	613, 230	697, 290	690, 965	645, 425	733, 742	630, 000
Kentucky	37, 545	30, 006	42, 450	60, 660	55, 998	37, 550
Louisiana	1, 040, 256	660, 494	747, 980	741, 698	882, 493	1, 240, 000
Michigan	42, 749	40, 645	51, 000	61, 593	58, 365	37, 500
Mississippi	----------	----------	----------	----------	2, 297	5, 000
Montana	104, 471	47, 770	124, 500	92, 092	88, 198	125, 000
Nebraska	----------	----------	----------	----------	49	----------
New Mexico	703, 252	656, 831	567, 620	647, 513	703, 915	727, 500
New York	40, 490	20, 575	56, 500	56, 750	51, 645	37, 500
Ohio	26, 358	15, 168	26, 000	43, 500	40, 335	25, 000
Oklahoma	1, 162, 370	838, 233	1, 093, 650	1, 401, 630	1, 287, 906	1, 055, 000
Pennsylvania	200, 460	170, 304	272, 500	267, 730	250, 376	190, 500
Tennessee	----------	----------	----------	500	450	----------
Texas	9, 447, 764	7, 234, 124	8, 471, 600	10, 209, 230	10, 794, 055	9, 875, 000
Utah	----------	----------	----------	20	18	----------
West Virginia	24, 468	9, 618	26, 000	45, 000	41, 461	23, 500
Wyoming	261, 133	303, 795	266, 735	273, 441	278, 061	310, 000
Total	17, 348, 146	14, 015, 093	15, 890, 840	18, 232, 774	19, 687, 379	18, 751, 050

The estimates of reserves of both the Oil Weekly and the Oil and Gas Journal for January 1, 1940, indicate a large addition to the proved reserves during 1939, for both estimates—the Oil Weekly's estimate of 18,751,050,000 barrels and the Oil and Gas Journal's estimate of 19,687,379,000 barrels—exceed the highest estimate, namely, 17.5 billion barrels,[2] for January 1, 1939. The States in which substantial additions to the reserves were made in 1939 include Texas, Illinois, California, Louisiana, and Arkansas.

A recent release from the American Petroleum Institute which has just been received is inserted at this point because it shows the estimated reserves, about the last word on the subject, as of January 1, 1940.

The American Petroleum Institute Committee on Petroleum Reserves herewith submits its estimates of proved reserves of crude oil in the United States as of January 1, 1940.

The committee estimates that proved petroleum reserves in the United States on January 1, 1940, totaled 18,483,012,000 barrels. This is 1,134,866,000 barrels greater than on January 1, 1939, and is the result of having blocked out 2,399,122,000 barrels of new reserves during the year—2,058,455,000 barrels through development in old fields and 340,667,000 barrels through discovery of new fields. The production in 1939 amounted to 1,264,256,000 barrels. New proved reserves discovered and developed in 1939, therefore, exceeded production by 1,134,866,000 barrels. The net result is an increase in crude reserves from 17,348,146,000 barrels at the beginning of 1939 to 18,483,012,000 barrels at the beginning of 1940. These figures include all grades of crude oil and distillate known to be recoverable under existing economic and operating conditions.

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[2] Wiess, H. C., Some current problems in oil conservation: Oil and Gas Jour., vol. 37, no. 41, pp. 46–170, February 23, 1939.

In column 1 of the accompanying table are the estimates of proved reserves arrived at by this committee as of January 1, 1939.

In column 2 are listed changes which oil-field development during 1939 indicated as necessary in the estimates in column 1. These revisions have resulted from extensions of known pools and from new data pertaining to reservoir conditions such as thickness and permeability of the pay zone, percentage recovery, etc.

In column 3 are shown the proved reserves in new pools discovered in 1939, and the proved reserves discovered in that year in new producing horizons in the older, known pools.

Column 4 is the total of columns 2 and 3 and represents the proved reserves discovered and developed in 1939. It should be noted that column 4 does not include column 1 as in previous reports of this committee.

The production of the year 1939 (column 5) is deducted from the sum of columns 1 and 4 to arrive at the estimated proved reserves as of January 1, 1940, shown in column 6.

It should be emphasized that the estimates in this report refer only to reserves already proved by drilling. Pools tested by only one or two wells have been assigned relatively low reserves which may be considerably augmented by later development. The proved reserves in the pools discovered in 1939 are estimated to amount to 340,667,000 barrels (column 3). The ultimate magnitude of the reserves in the pools referred to will not be known until their respective productive limits are completely outlined. This may not occur for a period of years. As development continues and as new reserves are discovered, they will appear under column 2. As an illustration of this, it is pointed out that additions in reserves of pools discovered in 1938, estimates for which appeared under column 3 in the report for January 1, 1939, make up a considerable portion of the revisions in older pools, which are shown in column 2 of the report of January 1, 1940, and which total 2,058,455,000 barrels.

These figures do not include any estimate of the reserves which may be found in areas known to be favorable to the accumulation of oil but as yet untested.

As in the past this committee wishes to emphasize the fact that every effort has again been made to secure a fair, unprejudiced, and representative opinion. Each member in his district appointed a number of subcommittees to gather and study the necessary data. The factors pertaining to the various pools were examined and adjusted in the light of new information. The total personnel of the subcommittees which were largely responsible for the analysis of the data included many experienced geologists and petroleum engineers. We wish to acknowledge the valuable assistance and information received from these men and others, and to thank all for their cooperation.

The Committee on Petroleum Reserves, J. Edgar Pew, chairman, Sun Oil Co., Philadelphia, Pa.; R. F. Baker, The Texas Co., New York, N. Y.; L. T. Barrow, Humble Oil & Refining Co., Houston, Tex.; Frank R. Clark, The Ohio Oil Co., Tulsa, Okla.; G. Clark Gester, Standard Oil Co. of California, San Francisco, Calif.; F. H. Lahee, Sun Oil Co., Dallas, Tex.; J. M. Sands, Phillips Petroleum Co., Bartlesville, Okla.; Fred Van Covern, American Petroleum Institute, New York, N. Y.; Theron Wasson, Pure Oil Co., Chicago, Ill.; Fred E. Wood, Standard Oil Co. (Indiana), Chicago, Ill.

Estimated proved petroleum reserves in the United States

[Barrels of 42 gallons]

State	Proved reserves as of Jan. 1, 1939 (1)	Revisions in proved reserves (including extensions) in fields known on Jan. 1, 1939 (2)	Estimated proved reserves in new pools and new producing horizons discovered in 1939 (3)	Proved reserves discovered and developed in 1939 (2)+(3) (4)	Production during 1939[1] (5)	Proved reserves as of Jan. 1, 1940 (1)+(4) less (5) (6)
Arkansas	188, 246, 000	144, 270, 000	8, 775, 000	153, 045, 000	21, 143, 000	320, 148, 000
California	3, 188, 763, 000	521, 433, 000	46, 500, 000	567, 933, 000	224, 354, 000	3, 532, 342, 000
Colorado	17, 713, 000	3, 840, 000		3, 840, 000	1, 391, 000	20, 162, 000
Illinois	242, 847, 000	189, 393, 000	43, 698, 000	233, 091, 000	94, 302, 000	381, 636, 000
Indiana	6, 031, 000	99, 000	9, 477, 000	9, 576, 000	1, 443, 000	14, 164, 000
Kansas	613, 230, 000	149, 549, 000	23, 411, 000	172, 960, 000	60, 723, 000	725, 467, 000
Kentucky	37, 545, 000	10, 622, 000	1, 500, 000	12, 122, 000	5, 581, 000	44, 086, 000
Louisiana	1, 040, 256, 000	139, 532, 000	87, 306, 000	226, 838, 000	93, 869, 000	1, 173, 225, 000
Michigan	42, 749, 000	30, 515, 000	613, 000	31, 128, 000	22, 799, 000	51, 078, 000
Montana	104, 471, 000	−5, 050, 000		−5, 050, 000	5, 961, 000	93, 460, 000
New Mexico	703, 252, 000	266, 000	20, 973, 000	21, 239, 000	37, 323, 000	687, 168, 000
New York	40, 490, 000				5, 098, 000	35, 392, 000
Ohio	26, 358, 000	7, 470, 000	1, 020, 000	8, 490, 000	3, 156, 000	31, 692, 000
Oklahoma	1, 162, 370, 000	43, 324, 000	17, 530, 000	60, 854, 000	160, 072, 000	1, 063, 152, 000
Pennsylvania	290, 460, 000				17, 337, 000	183, 123, 000
Texas	9, 447, 764, 000	732, 070, 000	73, 064, 000	805, 134, 000	484, 527, 000	9, 768, 371, 000
West Virginia	24, 468, 000	25, 000, 000		25, 000, 000	3, 580, 000	45, 888, 000
Wyoming	261, 133. 000	65, 900, 000		65, 900, 000	21, 417, 000	305, 616, 000
Miscellaneous[2]		222, 000	6, 800, 000	7, 022, 000	180, 000	6, 842, 000
Total United States	17, 348, 146, 000	2, 058, 455, 000	340, 667, 000	2, 399, 122. 000	1, 264, 256, 000	18, 483, 012, 000

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[1] These are U. S. Bureau of Mines figures.

[2] This includes Mississippi, Nebraska, Tennessee, Missouri, and Utah,

Coincidental with the greatly increased depths to which wells have been drilled in recent years the proportion of our oil reserves found at the greater depths has increased. Of the total volume of oil discovered in 1937—a quantity equal to the production of 1937 plus the net addition to the known reserves during the year—about two-thirds was found at depths less than 5,000 feet and one-third at depths greater than 5,000 feet; but the proportion of oil found at the greater depths has so increased since 1937 that the volume of oil found in 1939 below 5,000 feet nearly equaled that found above 5,000 feet. A portion of our reserves has been discovered at depths between 10,000 and 13,266 feet. The first production below 10,000 feet was obtained in 1935 at Binger, Okla., where the output has averaged 30 barrels per day. In 1937 and subsequent years substantial amounts of oil below 10,000 feet have been discovered and developed in 40 fields of which 8 are in California, 5 are in the Gulf coast region of Texas, and 27 are in the Gulf coast region of Louisiana. The amount of oil discovered below 10,000 feet in 1937, was about 12 percent of the total new oil found during the year, in 1938 it was 24 percent of the total, and in 1939 it was about 10 percent of the total.

In contrast to the increasing proportion of newly found oil reserves at the greater depths, more than half of the total oil reserves of the United States occurs at depth less than 5,000 feet. Of the total known reserves of oil as of January 1, 1939, nearly 60 percent occurred in producing zones less than 5,000 feet in depth, whereas about 37 percent occurred in zones between 5,000 and 10,000 feet and about 3 percent was in pools below 10,000 feet.

OIL-FIELD DEVELOPMENT AND PETROLEUM GEOLOGY, 1939, SUMMARIZED BY STATES

Summaries are here given of the outstanding developments during 1939 in the exploration for oil in each of the 23 States that have produced oil. In the preparation of the summaries use has been made of all available information, including the numerous technical and trade journals dealing with various phases of the petroleum industry. The statistical data on production, reserves, and drilling were taken from many different sources. Data from various reliable sources differ. Therefore, although not rigorously comparable, the data selected for inclusion in the summaries are believed to show adequately general relations and trends for the year.

APPALACHIAN REGION (NEW YORK, PENNSYLVANIA, OHIO, WEST VIRGINIA, KENTUCKY, AND TENNESSEE)

Production of petroleum in New York, Pennsylvania, West Virginia, and Ohio for 1939, according to preliminary figures issued by the Bureau of Mines, amounted to 29,171,000 barrels as compared with an output of 29,453,000 barrels during 1938—a decrease of 282,000 barrels. This decline in production in 1939 continued the downward trend that began in the fall of 1937 and persisted through 1938. But during the latter part of 1939 the decline changed to an upward trend in the production of petroleum consequent upon the upturn in general business.

No new fields of outstanding importance were discovered in the northern part of the Appalachian region during 1939. Drilling was chiefly confined to routine work in the old fields, though there was some wildcat drilling in the campaign that has been in progress for several years to test the deep-lying Oriskany and Medina sands, respectively of Lower Devonian and Silurian age. This work has resulted in the discovery of several gas-producing areas in the Oriskany sand in New York, Pennsylvania, West Virginia, and Ohio but no oil. Both gas and oil continue to be found in the "Clinton" [Medina] sand of central Ohio but oil in commercial amounts has not been found in the Medina sand in New York, Pennsylvania, or West Virginia. An explanation of the absence of petroleum in the deep-lying sands of the northern part of the Appalachian region is that their porosity and permeability have been so much reduced by cementation that they are ineffective as reservoirs of oil.

New York.—During 1939 the production of petroleum in the State of New York amounted to 5,098,000 barrels—a decrease of 53,000 barrels as compared with the output of the State during 1938, according to preliminary figures of the Bureau of Mines, United States Department of the Interior. In the fall of 1939 the production of petroleum increased slightly as a result of the increased demand following the upturn in general business.

Pennsylvania.—Production of petroleum in Pennsylvania during 1939 amounted to 17,337,000 barrels which is a decrease of 89,000 barrels as compared with the output of the State during 1938, according to preliminary figures issued by the

Bureau of Mines. During the fall of 1939 the rate of petroleum production in Pennsylvania increased somewhat over what it was in the early part of the year.

No new field of outstanding importance was discovered in Pennsylvania in 1939. Drilling was resumed in the Music Mountain field which was discovered in 1937 and a small field in Warren County, 2 miles northeast of Grand Valley was developed. In this Warren County field pumping wells having an initial production of 18 to 30 barrels a day made a significant contribution to the output of the State. The Bradford field in which water flooding has been practiced for many years continues to be the chief source of petroleum in Pennsylvania.

West Virginia.—During 1939 West Virginia produced 3,580,000 barrels of oil which is 104,000 barrels less than it produced in 1938, according to preliminary figures of the Bureau of Mines.

From January to October, inclusive, 1939, 405 wells were completed in West Virginia as reported by the State Department of Mines. Of these, 279 were gas wells, 78 were dry holes, and 48 were oil wells that had an average initial daily output of 32 barrels per well. No outstanding oil field was discovered in West Virginia.

Ohio.—Production of petroleum in Ohio during 1939 amounted to 3,156,000 barrels which was 142,000 barrels less than the output of the State during 1938, according to preliminary figures issued by the Bureau of Mines.

No outstanding oil field was discovered in Ohio during 1939. Repressuring and new wells drilled have not increased the production of oil sufficient to overcome the general decline.

Kentucky.—Drilling activity in Kentucky during 1939 dropped 17.5 percent below the figure for the previous year and production decreased from 5,821,000 to 5,581,000 barrels, according to preliminary statistics of the Bureau of Mines. Approximately 734 new wells were drilled, of which 275 produced oil and 147 produced gas. The greatest development occurred in western Kentucky where the discovery of 14 small pools and the extension of several old ones maintained production at the figure given above with no significant loss in reserves.

The most notable of the new discoveries were the Corydon pool, Henderson County, and the Belton pool, Muhlenberg County, both of which were opened early in 1939 as a result of geologic and geophysical prospecting. Each pool occurs on a small anticlinal nose in the McClosky lime (Mississippian). The Corydon pool is 2,600 feet below the surface, 60 acres in extent, and the reserve is estimated by the Oil and Gas Journal to be 140,000 barrels. The Belton pool is 1,530 feet deep and 80 acres in extent and is estimated to have a reserve of 240,000 barrels.

In common with the Corydon and Belton pools nine other new discoveries also produced from the McClosky, a formation which was below the usual depth of drilling in western Kentucky prior to 1938. The most important development of the year, perhaps, was the establishment of this zone as a source of oil production over a wide area in the western Kentucky basin.

The Birk City pool, discovered in 1938, continued to be the largest McClosky pool in the State and its production for the first half of the year totaled approximately 465,000 barrels. In addition, the Utica pool, Daviess County, and the Livermore pool, McLean County were deepened to include the McClosky as a producing zone. The addition to the reserve of the Livermore pool was estimated to be approximately 240,000 barrels.

The new Devonian fields discovered in Illinois during the year have had a stimulating effect on the deep drilling program in western Kentucky, and a thorough testing of the Devonian in the major producing areas seems to be assured.

Most of the 147 gas wells reported above were drilled in eastern Kentucky in the normal development of gas fields. Other drilling activity lagged behind that of western Kentucky, and no important new discoveries were made during the year. Oil production was limited for the most part to established fields where the decline in output has been arrested by the use of secondary recovery methods.

A major leasing campaign with deep drilling to the St. Peter sand (Ordovician) as the objective was conducted in eastern Kentucky during the first half of the year. Interest was centered on known surface structural features and depleted oil and gas fields. Of the several deep tests, one, near Barbourville, Knox County, reported a show of oil at 4,700 feet in sand that resembled the St. Peter, and it may be assumed that additional tests of this zone will be made in the near future.

Tennessee.—Petroleum production in Tennessee decreased from 41,000 barrels in 1938 to 37,000 barrels in 1939. The small pools in Clay County provided the largest part of the output, and most of the new wells were drilled in Clay and adjoining counties where a leasing campaign of considerable magnitude followed the discoveries of last year.

Exploratory drilling and leasing activity continued in western Tennessee, particularly in Lake, Obion, Dyer, Gibson, Lauderdale, Crockett, Tipton, and Haywood Counties. One well was drilled near Reelfoot Lake, Lake County; another near Bogota, Dyer County; and additional tests were being planned at the end of the year. Although no production has been obtained in western Tennessee to date, the recent substantial production from the Tinsley Dome field, Yazoo County, Miss., assures complete testing of the Tennessee Cretaceous.

Michigan.—The oil industry in Michigan was more active in 1939 than in any previous year. About 1,400 new wells were drilled and more than 800 of them produced oil. About a dozen new fields were discovered including extensions to deeper oil-bearing zones. At the close of the year additional new fields were being sought by using seismograph methods to interpret the geology beneath the glacial drift.

As a result of the new discoveries the oil production in Michigan increased from 19,211,000 barrels in 1938 to 22,799,000 barrels in 1939 according to preliminary figures of the Bureau of Mines, and the State was the eighth largest oil-producing State.

By far the greater part of the year's activity was in the southwest part of the State and all the newly discovered fields are located there. More than a thousand of the new wells were drilled in Kent, Ottawa, Allegan, and Van Buren Counties alone.

The geology of the new fields is very similar to that of the fields already known. For example, the structural feature that traps the oil in the Walker field in Kent County extends in a northwest-southeast direction as do the structural features in most of the other Michigan fields. The oil is produced from the Traverse formation (Devonian) which is 5 to 20 feet thick and is between 1,725 and 1,900 feet deep. There is considerable gas pressure throughout the field.

The Walker field has proved to be one of the major discoveries of the year in Michigan. Actually it was discovered late in 1938 but extension and active production did not start until 1939. During the first 6 months of the year 377,744 barrels of oil were produced and it is estimated that ultimate recovery will amount to 4,000 to 4,500 barrels per acre.

During the year about 250 wells were drilled in the central Michigan area. No new fields were discovered but in the fields already known, deeper producing zones were found at depths between 3,700 and 3,900 feet.

In the central-eastern part of the State, in Bay County, oil was discovered in the Monroe at 3,500 feet and some production was obtained. This is the first record of Monroe oil production in the eastern part of Michigan.

In the southeast part of the State, in Monroe County, oil was discovered in the Trenton limestone (Ordovician) at a depth of 2,080 feet. This discovery is of particular interest because when deeper production is sought in other parts of the Michigan basin the Trenton limestone will probably be one of the objectives.

The geology of the Michigan basin is largely concealed by glacial drift by the stratigraphy and structure of the basin are not complex and should be readily interpreted by geophysical prospecting. This kind of prospecting is beginning to be used extensively and probably will locate concealed structures that are favorable for the accumulation of oil or gas.

Illinois.—Illinois oil production continued the spectacular rise it began in 1937 and 1938 by nearly quadrupling its 1938 production total. In 1938 Illinois produced 23,929,000 barrels of oil and in 1939, according to preliminary figures issued by the Bureau of Mines, it produced 94,302,000 barrels. In all, 27 new oil pools were discovered, most of which were in White, Wabash, and Wayne Counties in the southeastern part of the State. During the year the number of producing oil wells increased from 2,120 to 4,778 and the daily average production per well rose from 59 to 67 barrels per day.

The most outstanding development in Illinois, however, was the growth of the Salem field in Marion County. During the week of January 7, 1939, this central basin field ranked seventh in daily production in the United States but by the end of the year in ranked second in total production for the year, having produced 50,179,000 barrels of oil. Not only did the Salem field expand rapidly during the year but the individual wells had high yields, many of them having been completed for initial productions of more than 4,000 barrels per day and one exceeded 6,000 barrels per day.

Although most of the new fields discovered during the year were in the southeastern part of the State by far the greater part of the oil, as in the preceding year, came from the rapidly expanding central basin fields. In addition to the 50,179,000 barrels of oil produced by the Salem field, the Loudon field, already a large field in 1938, produced 18,350,000 barrels and other central basin fields together produced more than 20,000,000 barrels so that approximately 93 percent of Illinois' oil came from the central basin fields in 1939. The Loudon field ranked eighth in the United States in total production for the year.

Perhaps the most important single discovery in the central basin was a well in Richland County that had an initial production rated at 1,358 barrels per day from the McClosky lime. This discovery was followed by the completion of other large wells in the same field.

A singificant feature of the deeper drilling campaign in the central basin was the demonstration that zones in the Devonian rocks were productive. The Salem, Sandoval, Sorento, Bartels, and Centralia townsites fields all proved to be productive in the Devonian. Much of the activity in 1940 is expected to be directed toward the development of this Devonian oil upon which the State's future productivity may largely depend.

Intense leasing and exploratory activity along the eastern and southeastern border of Illinois was stimulated by the discovery of the Griffin oil field in Indiana just across the Wabash River. At first this activity was poorly rewarded but, once started, discoveries followed one another in rapid succession. Oil was found in paying amounts in 6 zones. These include the McClosky lime of lower Mississippian age, several zones in the Chester group of upper Mississippian age, and the Biehl sand of Pennsylvanian age. The discovery of oil in the Biehl sand in the North Griffin field in Illinois made this field a virtual extension of the Indiana Griffin pool which also produces from the Biehl sand. Edwards County was added to the list of oil-producing counties in the southeastern part of the State in the fall of 1939.

The discovery of oil in Gallatin County extended the productive limits of the Illinois Basin considerably farther southeastward than had been anticipated and opens the way for continued exploratory activity during the coming year in the southeastern part of the State. Drilling for productive zones and new productive areas in the Devonian formations will probably engage the attention of operators in the central-basin area for some time.

Indiana.—Petroleum production in Indiana increased from 995,000 barrels in 1938 to 1,443,000 barrels in 1939, according to figures of the Bureau of Mines. Of 370 new wells, 165 produced oil, 42 produced gas, and 163 were dry. The greatest drilling activity occurred in the southwestern part of the State, particularly in Gibson and Posey Counties where several important discoveries were made.

The Griffin pool, Gibson County, was extended along a northeast trending anticlinal axis into Posey County, Ind., and Wabash County Ill., and as a result, the whole Wabash Valley became an area of active interest. Production in the Griffin area has been obtained from five zones, all of Mississippian age, and the Biehl sand of Pennsylvanian age. More than 100 wells have been drilled, and, according to the Oil and Gas Journal, the estimated reserve of the Indiana part of the area—about 1,400 acres—is 6,300,000 barrels. This field should become an important producing center in 1940.

The Ribeyre Island part of the New Harmony pool, Posey County, Ind., and White County, Ill., was developed during the summer of 1939. The average initial production from 9 wells in the Waltersburg sand (Mississippian) was 350 barrels per day, and from 1 well in the Tar Springs sand (Mississippian) 175 barrels per day. Wells in the Waltersburg sand average 2,165 feet in depth, the proved area is approximately 200 acres, and the reserve is estimated by the Oil and Gas Journal to be 800,000 barrels. Although tests of lower beds on the discovery tract were unsuccessful, the McClosky has become an important producing zone in an extension of the pool in White County, Ill.

The North Francisco pool, Gibson County, an important McClosky lime development, was discovered during deeper exploration in the vicinity of the old Francisco oil and gas fields. Approximately 360 acres that have an estimated reserve of 1,260,000 barrels have been proved to date. Additional areas of McClosky development discovered during 1939 were the Mumford (Heston) pool, Gibson County; the Walker pool, Gibson County; the Point pool, Posey County; the Millersburg pool, Warrick County; and the Enterpries pool, Spencer County, which produced also from the Cypress and Aux Vases sands of Mississippian age. Reserves of these five new fields are reported to total approximately 1,200,000 barrels.

Other drilling activity during the year resulted in the discovery of a 20-acre Chester sand (Mississippian) field near Hazelton, Knox County; the development of a new producing zone in the McClosky lime of the Rockport field, Spencer County; and in the extension of the Tar Springs sand in the Heusler field, Posey County.

During the second half of 1939 interest was renewed in the old Trenton field in the northeastern part of the State. The original pools in this area are nearly depleted, but 500 to 600 feet of Trenton limestone below the zones of former production still may be considered as having oil possibilities. Moreover, untested areas remain on the southwestward-dipping flank of the Cincinnati arch. Recent drilling in Marion County near Broad Ripple and in Jasper County has yielded encouraging shows of oil, and there may be additional drilling in the area during 1940.

The recent Devonian production in Illinois will have an influence on the trend of drilling in Indiana, and deep tests, particularly in known productive areas, are to be expected in the near future.

MIDCONTINENT REGION (ARKANSAS, KANSAS, LOUISIANA, MISSISSIPPI, MISSOURI, NEW MEXICO, OKLAHOMA, AND TEXAS)

Arkansas.—Arkansas produced about 21,143,000 barrels of petroleum in 1939, according to preliminary figures of the Bureau of Mines. The increase over the 18,077,000 barrels produced in 1938 is largely accounted for by the rise in daily average production of the Magnolia field from 3,000 barrels in March to 20,000 barrels in December. The extension of this field in 1939 has probably about doubled the proved reserves of the State. The field provides an excellent example of the application of conservational methods. Under administration of the Arkansas Oil and Gas Commission the field has been carefully developed following a program of widely spaced wells and controlled bottom-hole pressures and gas-oil ratios. Estimates now place recoverable reserves at 180,000,000 barrels of oil, 292,000,000,000 cubic feet of gas, and 628,000,000 gallons of natural gasoline and butanes. The productive area of the field is outlined on the north and south and when the drilling program is completed by additional wells at the east and west edges it is estimated that the field will include about 100 wells. The 4,000 productive acres have an average oil-saturated producing zone about 125 feet thick. It is planned to provide an oil-withdrawal rate as close as practical to the rate of water encroachment, thus maintaining the reservoir-pressure at a maximum, and making possible a high recovery figure of 60 percent. It is believed that this withdrawal rate will be about 20,000 barrels daily, close to the present production rate of the field. Construction of a natural-gasoline plant to process casing-head gas from the oil wells was begun.

Exploration for production in the Smackover limestone continued in the southwestern part of the State, where an active geophysical campaign had discovered a large number of prospects to be tested. In the first half of the year there were several failures in deep tests to the Smackover limestone and the Lewisville field in Lafayette County was the only new area to produce from this formation. Later in the year, however, Smackover lime production was found at more than 8,800 feet in the Dorcheat area of Columbia County and at the very close of the year it appeared that the Big Creek field, also in Columbia County, had been established by the completion of a well yielding 168 barrels of condensate and 4,000,000 cubic feet of gas at 7,980–7,987 feet in the Smackover limestone. There were also extensions in the deep producing zones in many of the older fields.

Kansas.—During 1939 a total of 60,723,000 barrels of oil was produced in Kansas, according to preliminary figures issued by the Bureau of Mines. The total amount produced during the year increased more than half a million barrels over the total amount produced in 1938.

A total of 1,360 wells was drilled in Kansas in 1939. Of these, 981 were completed as oil wells, 70 as gas wells and 309 as dry holes. Very few wildcat wells were drilled. For the most part only the wells that were needed to validate expiring leases and necessary offsets in oil fields were drilled.

Twenty-one new oil pools, and 10 pools in new sands in old fields and 2 new gas pools, were discovered in 1939. Of the 22 new oil pools, 7 are in Barton County, 3 are in Rice County, 2 each are in Russell and Cowley Counties, one each is in Phillips, Norton, Pratt, Butler, and Johnson Counties. Of the 23 new oil and gas pools, 6 were found on the basis of subsurface geology, 5, surface geology; 2, core drilling; 1, seismograph surveys; 3, chance, and 6 wells drilled because the leases were about to expire.

Of the new oil and gas pools, 2 are in the "basal sand" of probable Cambrian age; 9 are in the upper part of the Arbuckle lime of Ordovician age; 3 are in the Mississippi lime of Mississippian age; one each is in the Bartlesville and Burbank shoestring sands, and 6 are in the Oswald lime, all of Pennsylvanian age; and one, a very small gas pool, is in the Smoky Hill chalk member of the Niobrara formation of Upper Cretaceous age.

The most active areas of development continued to be mainly those on the Barton arch in western Kansas including Barton, Russell, Ellis, Rice, and Reno Counties. Particularly active areas included the Arbuckle lime pools in the Bemis-South Burnett district of northeastern Ellis County; the Arbuckle lime pools in the Ellinwood-West Ellinwood district of southeastern Barton County; the Arbuckle lime pool of the Trapp field in Russell County; the Arbuckle lime and Lansing lime pools in the Silica field of Rice and Barton Counties. The Bemis-South Burnett district will increase in importance in 1940 because the Stanolind Pipe Line Co. has announced plans for laying a new pipe line to the district.

The most spectacular developments in 1939 included (1) the Hittle pool in the Arbuckle lime in Cowley County where several new wells had initial daily yields ranging from 5,000 to 22,000 barrels; (2) the Bornholdt pool in the Mississippi lime in McPherson and Rice Counties where the producing area appears to be large; (3) the Zenith pool in the Misener sand in Stafford County; and (4) the Bemis-South Burnett pools in the Arbuckle lime in northeastern Ellis County.

Areas that were most active for the acquisition of leases included the Forest City basin of northeastern Kansas, and the Barton arch area of western Kansas. Although the activity in the Forest City basin had subsided materially, the finding of oil in a well in Richardson County, Neb., 4 miles north of the Kansas boundary somewhat revived interest in the region. The importance of the discovery in Nebraska is yet to be proved, however. Three deep dry holes in the Kansas part, and several dry holes in the adjoining Missouri part of the basin materially cooled the enthusiasm for the region.

Discovery of Lansing lime pools in Phillips and Norton Counties, and particularly the development of the Morel pool, which was discovered prior to 1939, in the Arbuckle lime in eastern Graham County enhanced the interest in this part of northwestern Kansas.

Rahn oil pool: Late in 1939 the Rahn oil pool was discovered in the Burbank sand of the Pennsylvanian series. This field is about 10 miles northeast of Arkansas City in southern Cowley County, in southeastern Kansas. The discovery well flowed initially, after a 40-quart shot, at the rate of 115 barrels an hour. A second well, half a mile north of the discovery well, reached the Burbank sand in January 1940 and found it oil-saturated but to date has penetrated only the uppermost 2 feet of the sand. The gravity of the oil is 38°. The oil sand lies at a depth of about 2,925 feet. The sand body in the first well is 43 feet thick, and is of an unknown thickness in the second well which is still drilling.

The Rahn pool is 15 miles south of the south end of an oil-bearing shoestring sand belt that was developed years ago for a distance of 33 miles through southeastern Butler County and north-central Cowley County. The pool is in a region that was recommended in 1936 and 1937 for prospecting for oil pools in the Burbank sand by the Geological Survey, Department of the Interior and the Kansas Geological Survey, following a cooperative investigation made by these bureaus of the shoestring sand belts of southeastern Kansas and northeastern Oklahoma. The discovery of the new pool will encourage more prospecting to connect it with the old pools that lie 15 miles to the north and will doubtless cause prospecting to be carried on southward from the pool.

Bornholdt pool: The discovery well of the Bornholdt pool in T. 20 S., Rs. 5 and 6 W., McPherson and Rice Counties, was drilled in 1937 but little significance was attached to the discovery and it remained a 1-well pool until the latter half of 1939, when additional wells showed that the pool extends over a large area. On January 1, 1939, a total of only 10,648 barrels had been produced. On January 1, 1940, the pool contained 13 wells whose combined potential daily yield was 14,600 barrels, and 14 new wells were being drilled. The oil, which was a gravity of 36° to 37° is found with considerable gas in the weathered zone in the uppermost beds of the Mississippi lime at depths of about 3,275 to 3,375 feet. The oil in this pool appears to be held in a stratigraphic trap on a broad regional structural high in the subsurface rocks.

Louisiana.—Northern Louisiana: The production for the year in northern Louisiana was only 25,403,000 barrels according to preliminary figures of the Bureau of Mines as compared with 28,443,000 barrels in 1938 and for most of the year there was a discouraging record of exploration. Deeper production was, however, discovered toward the end of the year in the Lisbon field of Claiborne Parish, when a cooperative slim hole test of the lower Marine or Cotton Valley formation obtained gas and condensate from a depth of 8,444 to 8,464 feet. Extensions in the Cotton Valley, Shreveport (Cross Lake), Converse, Blue Lake, Bear Creek, Waskom, and Sligo fields, and new shallow Woodbine production at 2,400 feet in the Temple area of the old Caddo field also added somewhat to the proved reserves.

Gulf coast: In 1939 12 new oil or condensate fields were discovered in the Louisiana Gulf coast region, and one new gas field was discovered that may, on the basis of past experience in coastal exploration, ultimately become an oil field. Favorable indications are reported in other wildcat wells now drilling. One or more new productive sands were reported from 27 fields that had been discovered in preceding years. The discovery record for 1939 therefore is greater than that of any previous year except 1938. Nevertheless, the depth at which oil was found in the new fields of 1939 was greater than ever before, averaging about 9,200 feet for the 12 fields, as compared with somewhat more than 8,000 feet for the new fields discovered in 1937–38 and about 6,500 feet for the new fields found in 1934–36. In 4 of the 1939 fields the producing zones lie at depths of more than 10,000 feet.

The new fields found in 1939 are Barataria, Jefferson Parish; Bel (North Elton), Allen Parish; Eola, Avoyelles Parish; Grand Lake, Cameron Parish; Happytown, St. Martin Parish; Kenilworth, St. Bernard Parish; La Pice, St. James Parish; La Place, St. John the Baptist Parish; La Fourche Crossing, La Fourche Parish; Paradis, St. Charles Parish; Plumb Bob (Henderson), St. Martin Parish; and Vermilion Bay, Iberia Parish. Gas production only has been reported from the Perkins field, Calcasieu Parish.

The outstanding discovery in 1939 was probably the Eola field in Avoyelles Parish, where substantial production was found during the month of January in the Wilcox at depths of 8,443–8,550 feet, the first important production from this formation in the Gulf coast. The opening of this field began an extensive prospecting campaign in the Sparta-Wilcox trend in Louisiana that subsequently extended into Texas. Since then, major Wilcox production has been found in the Ville Platte field, Evangeline Parish, formerly productive from the overlying Sparta sand. A number of prospects have been located in the trend and the Wilcox is now regarded as potentially productive elsewhere in coastal Louisiana. In the next 2 years a sufficient number of prospects should be drilled to test adequately this potential productivity.

One of the most important discoveries of the year is believed to be the Paradis field, St. Charles Parish, where 9 sands that have productive potentialities have been logged and the producing area, as indicated by the structure as now outlined, may be unusually large. The second well, more than a mile from the discovery well, flowed 38.4° gravity oil from a sand at 10,295–10,340 feet, about 425 feet below the discovery well's producing zone.

Judging from the record of the discovery well, the Happytown field, St. Martin Parish, will be a prolific producer. The discovery well flowed on potential gage 1,013 barrels of 39.3° gravity oil per day through a ¼-inch choke from a Miocene sand in which casing was perforated at 9,745–9,758 feet.

For most of the year drilling activity was about the same as in the preceding year, but in the last quarter it increased materially over 1938 with the result that a total of more than 800 wells were drilled as compared with about 550 in 1938. The ratio of new discoveries to wildcat wells continued high, a new field being discovered for every five wildcat wells drilled. This high ratio of discovery is due to the fact that coastal Louisiana wildcat wells are drilled on geophysical prospects that efficiently locate the buried traps and also to the natural high productivity of such traps in the coastal region.

The production for the year despite proration was 68,466,000 barrels, according to preliminary figures of the Bureau of Mines, as compared with 66,731,000 barrels in 1938, the increase being due to discovery both of new fields and new sands in old fields. New exploration was not especially active, the high discovery rate of recent years being due chiefly to the drilling of previously located geophysical prospects. The proved reserves notably increased during 1939 and the district has large possibilities for greater increases in the future.

Mississippi.—After many years of unsuccessful exploration, the first substantial production of oil was obtained in Mississippi when the Tinsley field in Yazoo County, in the west-central part of the State, was discovered in September 1939. At the end of the year 8 producing wells had been drilled and the production totaled 107,000 barrels. The principal productive zone at present is a sand at a depth of about 4,550 feet in the Selma chalk of Upper Cretaceous age, but some oil has been obtained from a sand in the underlying Eutaw formation at a depth of more than 4,850 feet. Still older beds have been tested to a depth of 6,112 feet but have not as yet been found productive. As a result of the discovery of the Tinsley field there has been a very active campaign of leasing and prospecting, particularly in central and northern Mississippi. In November it was reported that there were at least 50 geophysical parties operating in the State, including seismograph, gravity meter, magnetometer, and soil-analysis parties. In the central and northwestern parts of Mississippi general geologic conditions are not greatly dissimilar to those of adjoining parts of Louisiana and Arkansas but it is believed that possibilities of oil production from rocks of Lower Cretaceous age are restricted to a relatively small region on the western border of the State. Although surface geologic features locally are significant and in fact led to the discovery of the Tinsley field, information derived by this means is inadequate and will everywhere be checked and complemented by geophysical investigations.

The Sparta-Wilcox trend of Louisiana extends eastward across the southern part of Mississippi and is being actively explored. In the extreme southern coastal part of the State, salt domes may be discovered that will yield production from zones like those productive in the coastal salt domes of Louisiana. Geophysical exploration of submerged lands along the coast that have been leased from the State is under way.

Missouri.—No new oil or gas fields have been discovered in Missouri during the year 1939. Oil production from old fields was 24,000 barrels for the year.

Search for oil in the Missouri sector of the Forest City Basin began early in 1939 with a test in Holt County. Leasing was active in this part of the State and several other test wells were drilled, all without success. Of the 6 unsuccessful tests reported during the first half of 1939, only 1 in the Basin proper went below 1,500 feet. This was in Clay County. It penetrated Arbuckle lime at 1,657 feet and was abandoned. Small showings of oil were reported, however, in overlying formations. In northeastern Missouri 1 wildcat well was drilled in Shelby County and 1 is being drilled in Schuyler County. Two wildcat wells are being drilled in Bollinger and Butler Counties in the southeastern part of the State.

Nebraska.—After many years of prospecting, the first commercial oil production was obtained in Nebraska from a well drilled by the Pawnee Royalty Co. in sec. 18, T. 1 N., R. 16 E., Richardson County, in the southeastern corner of the State. The oil was found in the Silurian lime at a depth of 2,279–88 feet. On initial swabbing test the well produced at the rate of 14 barrels hourly and with temporary pumping equipment tanked 230 barrels of oil the first 24 hours. After it had been producing for 19 successive days, water broke into the hole and the pump clogged. On December 31, 1939, it was reported that the well was again producing. The company is attempting to win the Nebraska State bonus of $15,000 for the first well in the State which produces as much as 50 barrels of oil per day for 60 days. The structure on which the well is located was determined by seismograph surveys. A second well is being drilled by the same company in sec. 24, T. 1 N., R. 15 E.

Richardson County is in the Nebraska sector of the Forest City Basin, that includes also adjoining parts of Kansas, Missouri, and Iowa. Formations of Paleozoic age (Pennsylvanian to Cambrian), some of which have yielded oil in Kansas and other States, underlie this basin, and there has been active leasing and some drilling in it. If structural or stratigraphic traps can be located in these formations and be adequately tested by the drill, it is possible that other oil or gas pools may be found.

In November 1939, it was reported in trade journals that a well in sec. 21, T. 14 S., R. 31 W., Keith County, in southwestern Nebraska, had found shows of oil and gas in the Niobrara and Fort Hays limes. The well reached a depth of 3,270 feet but has not, so far as known, been completed.

New Mexico.—During 1939 New Mexico produced 37,323,000 barrels of oil according to preliminary figures issued by the Bureau of Mines and was seventh in rank among the oil-producing States. Its 1939 production was about 1½ million barrels greater than production in 1938. Except for the small production obtained in San Juan County, the entire output of New Mexico came from Lea and Eddy Counties in the southeast corner of the State. Activity during the year resulted in the discovery of several new fields and the systematic development and extension of proved areas. However, the known reserves of oil in the State at the end of the year have been estimated by the trade journals to be slightly more than 700,000,000 barrels or approximately the same as the estimates of known reserves of oil at the beginning of the year. Between 600 and 700 wells were drilled in 1939 and more than 500 wells were completed as oil producers.

The principal drilling activity and new developments in 1939 were in Lea and Eddy Counties along the two parallel and more or less distinct productive zones on the east and north sides of the Delaware Basin. All production in these counties, as in previous years, was obtained from rocks of Permian age.

On the east side of the basin much new oil was found in extensions of, and by drilling between proved fields in the vicinity of the Eunice, Hardy, Penrose, Skelly, Lynn, Cooper, and Mattix fields. Another important development was the discovery early in the year of the Lovington field, about 10 miles northwest of the Hobbs field and the northernmost producing area on the east side of the basin.

In addition to extensions of proved areas, such as the Vacuum and Artesia fields, new fields were discovered on the north side of the Delaware Basin. These include the Halfway field and the North and South Maljamar fields in western Lea County and the High Lonesome, Loco Hills, Gates, and Wills fields in northern Eddy County. Of these fields only the Loco Hills field had been proved by the end of the year to be a discovery of major importance. Discovered early in the year, the Loco Hills field had about 70 producing wells at the end of the year. Production is obtained from the Permian at a depth of about 2,800 feet in sand bodies that probably become thinner and wedge out toward the north and west. The limits of the field have not yet been defined and the productive area may exceed 10,000 acres.

The discovery of oil in the Permian in Chaves County, 33 miles east of Roswell, and about the same distance north of the producing area in northern Eddy County, may have considerable importance, but the real significance of the discovery will not be known until additional wells are drilled.

In northwestern New Mexico a few wells were drilled in the known Rattlesnake and Table Mesa fields to obtain additional production of high gravity oil from the shallow Dakota (?) sandstone of Cretaceous age.

Oklahoma.—A total of 160,072,000 barrels of oil was produced in Oklahoma during 1939 according to preliminary figures issued by the Bureau of Mines. The decline in the State's production, which began in 1937, has continued through both succeeding years. The Oklahoma City and Fitts fields, the St. Louis-Pearson district, and the combined Burbank and South Burbank pools produced the most oil.

A total of 1,765 wells was drilled in 1939. Of these 1,050 were completed as oil wells; 110 as gas wells and 605 as dry holes. This is very nearly the same number of wells as were drilled in 1938. Relatively few wildcat wells were drilled. However, the deepest well drilled in 1939, which is also the second deepest well in the world, is a wildcat in Washita County, in southwestern Oklahoma. It reached a total depth of 14,582 feet.

Twenty-two oil pools, which include 6 pools in new sands in old fields, were discovered in 1939. No pools that appear to have large reserves were discovered. Of these 22 new pools, 11 were discovered by means of subsurface geology; 5 by surface geology; 2 by a combination of surface and subsurface geology and seismograph surveys; 1 by a combination of surface and subsurface geology; 1 by a combination of surface geology and seismograph surveys; 1 by a combination of subsurface geology and seismograph surveys; and 1 by seismograph surveys alone. Of the new pools, 5 are in the Simpson formation and the upper part of the Arbuckle formation and 2 are in the Viola limestone, all of Ordovician age; 6 are in the Hunton limestone of Silurian and Devonian ages; 1 is in the Misener sand and 1 is in the Woodford formation, both of probable Devonian age; and 1 is in each of 13 sands in the Pennsylvania series.

The most active areas of development were (1) the Seminole district in Seminole and Pottawatomie Counties, particularly the St. Louis field of that district, where several pools were discovered mainly in the Simpson dolomite, (2) many small areas in the old oil-bearing districts of Creek County, where pools were discovered in the Pennsylvania, Misener, and Wilcox sands, (3) the western part of the old Cement field of Caddo County, where new pools in Pennsylvania sands were discovered, and (4) the Altus and West Frederick fields in Jackson and Tillman Counties where pools were developed in Pennsylvania sands in the Altus field and in the Simpson and Arbuckle formations in the West Frederick field.

The greatest interest in leasing continued, as in previous years, to be in the western half of the State.

West Frederick oil pool: Oil in the Simpson formation and Arbuckle lime was discovered by the Indian Territory Illiminating Oil Co., in the West Frederick pool in sec. 36, T. 2 S., R. 19 W., Tillman County, on May 21, 1939. The discovery well was located on the basis of subsurface geology and seismograph surveys. The oil is found at an average depth of 5,200 feet and the producing zone has an average thickness of 30 feet. The average initial daily production of the wells is 500 barrels. It is estimated the area will have an ultimate yield of 4,000 barrels to the acre and that the pool will extend over an area of 500 acres. A total of 23,615 barrels had been produced by January 1, 1940.

Hobart oil pool: The Hobart oil pool in sec. 20, T. 7 N., R. 17 W., Kiowa County, was discovered by Russell Tarr, et al., on the basis of surface geology in

May 1939. The oil is found in limestone conglomerate of the Pontotoc group and probably also in the weathered uppermost part of the underlying Viola limestone which lies at an average depth of 1,100 feet. The average thickness of the producing zone is 15 feet. The pool is estimated to cover an area of 700 acres and is expected to produce about 3,000 barrels to the acre. On January 1, 1940, the four producing wells had produced a total of about 45,000 barrels. The gravity of the oil ranges from 35° to 36°.

Texas.—During 1939, according to preliminary figures issued by the Bureau of Mines, Texas produced 484,527,000 barrels of oil which is an increase of approximately 1.8 percent over the 1938 oil production of 475,850,000 barrels but 5.4 percent less than the 510,318,000 barrels produced in 1937. Texas increased its number of producing oil wells by more than 5,000 during 1939, and now has, in all, more than 90,000 producing oil wells.

In the accompanying table is shown the relative magnitude of each of the six oil-producing districts in Texas in terms of percentage of the State's total oil production for the years 1938 and 1939. These percentages are based on preliminary figures issued by the American Petroleum Institute.

Percentage of annual oil production in Texas, 1938–39, by districts

District	1938	1939
Panhandle	5.0	5.0
North- and west-central Texas	7.9	8.4
West Texas	15.3	16.6
East Texas	38.8	36.5
Gulf coast	15.6	16.5
South Texas	17.4	17.0

This table shows that East Texas still dominates the State in oil production but that its dominance is gradually giving way to the increased production from West Texas, the Gulf coast, and north- and west-central Texas. The table also shows a slight decrease in the percentage of oil produced in South Texas which stands out sharply from the rapid gains this district made in each of the preceding 5 years during which it rose from 7.4 percent of the State's production in 1934, to 17.4 percent in 1938.

One of the notable developments in Texas during 1939 has been the increased production and processing of condensate. During the year 1939 the first large plant for treating this high gravity condensate was put in operation. Condensate has been produced from 92 fields and has been treated in 16 recycling or repressuring plants. At least three more similar plants are proposed or were in course of construction at the close of the year. Most of these plants are in South Texas and in the Texas-Gulf Coast district.

Panhandle: No new oil pools were discovered in the Panhandle district during 1939 though the wildcatting activity was somewhat greater in the first half of the year. The development in the established pools continued at about the same gradual rate. The production for 1939, according to Bureau of Mines preliminary figures, was 24,165,000 barrels as contrasted with 23,556,000 barrels in 1938—an increase of approximately 3 percent. The number of oil wells completed, however, continued to decline; 347 having been completed in 1939 as contrasted with 445 in 1938 and 655 in 1937.

Comparatively few new oil-producing areas are to be expected at the depths of the present oil pools though the present pools may be extended. The oil possibilities of the pre-Pennsylvanian rocks at greater depths have been little explored.

North-central and west-central Texas: Exploration of the Palo Pinto limestone of the Pennsylvanian Canyon group in a belt extending southwestward through Shackelford and Jones Counties was the most active it has been in 20 years and resulted in the discovery of many new oil pools. In north-central Texas the activity was centered in Archer County where 6 new oil pools were discovered. In the north-central and west-central districts together 48 new oil pools were discovered, many of which give promise of being substantial producing areas through some are small and others are not yet adequately explored. Despite the large number of new pools only 6 new producing zones were discovered in these two old but very active districts. Most of the discoveries have resulted from wildcat exploration which locally, at least, was guided by geologic trends.

During 1939 active drilling demonstrated that the Hull-Silk and Sikes pools in northern Archer County are really one large producing area more than 4 miles long. Drilling continued active in the K. M. A. field whose westward extension was extended into Wilbarger County. Fields in Cooke and Montague Counties also were extended and are developing into important producing areas. In Jones County rapid drilling considerably extended and finally defined both the Avoca and Griffin pools. Many other pools in Jones, Shackelford, Stephens, Taylor, and Brown Counties were either extended or their reserves increased by the discovery of new and deeper producing zones.

These two districts, according to American Petroleum Institute preliminary figures, reached a new production peak of 40,767,000 barrels which is 8½ percent greater than the flush production of 1937. During 1939 fewer oil wells were completed than in the preceding year but the high yield of oil per well apparently offset the drop in number of completions. In the two districts a total of 2,723 wells were drilled of which 1,429 were oil wells, 34 were gas, and 1,003 were dry.

The success of exploratory drilling in these two districts during 1939 assures continued activity in many areas, especially as most of the production comes from zones less than 4,000 feet below the surface. Moreover, wildcat drilling yields the greatest returns in productive wells of any of the districts in Texas. Of the 230 wildcat wells drilled, 34 produce oil and 1 produces gas, that is, 15.2 percent productive wells. The percentage of productive wildcat wells in the other Texas districts ranged from 4.5 to 11.6 and the average for the State was 11.4.

West Texas: Active development in west Texas during 1939 resulted in the discovery of several new oil-producing areas and deeper productive zones in a few fields, and also resulted in marked expansion of proved fields. During the year 79,793,000 barrels of oil were produced in west Texas, according to preliminary figures issued by the Bureau of Mines. The production was about 4 million barrels greater than the previous annual peak production of 75,743,000 barrels in 1937 and about 7 million barrels greater than the production in 1938. Discoveries of new oil in west Texas, according to estimates published in the Oil and Gas Journal, were sufficient to increase the known reserves of oil. During 1939 about 1,800 wells were drilled, of which more than 1,600 were completed as oil producers.

New production in west Texas was obtained principally in the western part of the district as a result of further development along the sides of the structurally high Central Basin platform. Most of the new production was obtained from extensions of known fields or the development of new fields near or between fields already proved.

On the west side of the platform the Lehn and Fromme fields were discovered in the Permian in northern Pecos County. Oil was also obtained from the older Ordovician rocks in the Apco field, northern Pecos County, in the heart of the old Masterson area. This discovery of oil in the Ordovician, the third in west Texas, stimulated exploration of the Ordovician rocks in the southern part of the Permian Basin. The Pecos Valley and Shearer fields in northern Pecos County were extended during the year.

Along the east side of the Central Basin platform oil was discovered in the Permian in new fields at three localities near the northern limit of production; these fields are the Waples-Platter field in Yoakum County, the Shaw-Dean field in Cochran County, and the Cedar Lake field in northeastern Gaines County. Of these three new fields, the Cedar Lake field appears to be the most important. The discovery of this field, which was based upon geophysical exploration, establishes the most easterly producing area in the northern part of the Permian Basin; it is 26 miles northeast of the nearest producing area, the Seminole field, and may mark a new productive trend in the northern part of the basin. The field produces from Permian limestone at a depth of 4,765 feet; at the end of the year it had three producing wells. In the North Cowden field, Ector County, oil was produced from the Permian at a depth of 5,148—68 feet, or about 1,000 feet deeper than it had hitherto been otained in the field. A slightly deeper and more prolific zone in the Permian was also discovered in the Crockett field in northwestern Crockett County. The productive areas of many fields on the east side of the platform in Cochran, Hockley, Yoakum, Gaines, Andrews, Ector, Crane, Upton, Pecos, and Crockett Counties were extended during the year and these extensions were responsible for most of the increase in known reserves in west Texas. Two years of drilling in the Wasson-Denver-Bennett fields in Yoakum and Gaines Counties have proved extensions to these fields that appear to indicate that they will ultimately merge into a single large Permian producing area. The merged fields would embrace an area said to be more than 44,000 acres even though the limits of the enlarged field are not yet defined. The size of such a productive area would be second in Texas only to the East Texas field. Extensions to the Slaughter and Duggan fields in Hockley and Cochran Counties and producing wells drilled in the intervening area indicate that these fields also will probably merge into a single producing area. Similarly, there is some expectation that further development of the Johnson-Foster, North Cowden, and Goldsmith fields in Ector County will demonstrate that these fields are parts of one large productive area. Near the center of the Central Basin platform in Crane County the Sand Hills and Tubbs fields that produce from the Permian were extended during 1939.

On the east side of the Permian Basin oil was obtained from the Pennsylvanian in Schleicher County in the Opp and Bert Page fields. Farther north, the productive areas of the Snyder field in Howard County and the Sharon field in Scurry County were extended during the year. None of these developments resulted in large production.

East Texas: Most of the activity in the east Texas district was concerned with prospecting for productive areas in the Trinity group, particularly in the Glen Rose, although early in the year wildcat exploration for productive areas in the Woodbine was active. During 1939 four new pools were discovered, three of which are in the Woodbine and the fourth is in the Glen Rose. The Glen Rose pool is in Limestone County and is the first condensate pool in the Glen Rose east of the Balcones-Mexia fault zone. These new fields are the result of wildcat exploration.

The Mabank, Flag Lake, and Opelika pools in Henderson County and the Navarro Crossing field in Houston County were extended. The huge East Texas field, however, decreased in area and, as a result of salt water encroachment, many wells along the western edge of the field were taken off production and several salt water disposal plants were being erected. The drilling activity in other parts of the East Texas field was reduced to a few wells per week as contrasted with the completion of 75 or 80 oil wells per week for the past 6 or 7 years.

The reduced activity in the East Texas field and shut-down periods are reflected in the east Texas district's oil production for 1939, which, according to preliminary data issued by the American Petroleum Institute, was 176,127,000 barrels as contrasted with 184,367,000 barrels in 1938 and 212,003,000 barrels in 1937. More marked, however, is the decrease of drilling in the East Texas field for only 417 oil wells were completed in the east Texas district during 1939 as contrasted with 2,071 in 1938 and 3,240 in 1937. In addition to the 417 new oil wells in the East Texas field there were drilled in the district 130 more oil wells, 32 gas wells and 149 dry wells, making a total of 728 wells for 1939.

As two of the Glen Rose pools were discovered late in the year they gave a considerable impetus to further prospecting for Glen Rose production in the early part of 1940. Further exploratory work will depend largely upon the outcome of the numerous wildcat wells being drilled at the close of the year.

Gulf Coast district: During 1939 exploration continued active and resulted in the discovery of 12 new fields of which 4 are condensate fields. These new fields are scattered among 10 counties, but 2 counties, Galveston and Liberty, each have 2 new fields. In addition to the new fields, 8 or more new producing zones were discovered. These discoveries of new fields and producing zones range in depth from 4,132 to 10,460 feet which is the deepest producing zone in the Texas Gulf Coast district. The average depth of the producing zones in these discovery wells is nearly 7,300 feet. The discoveries are credited to geophysical prospecting and exploratory drilling coupled with subsurface geology.

Notable extensions as a result of flank drilling and the discovery of new producing zones took place in the West Ranch field of Jackson County, the Martha field in Liberty County, the South China and Lovell's Lake fields in Jefferson County, and the South Cotton Lake field in Chambers County. Fields in each of six other counties along the Texas Gulf coast in this district were also extended.

During 1939 the Texas Gulf Coast district, according to preliminary data issued by the American Petroleum Institute, produced 79,504,000 barrels of oil which is 6.7 percent more than the district produced in the preceding year. The number of oil wells completed, however, was 17 percent less than in 1938. In all, 1,291 wells were drilled and of these 980 were oil wells, 48 gas, and 263 were dry.

Presumably geophysical prospecting and deep exploratory drilling in the Texas Gulf Coast district will continue for some time at approximately the same rate because the deepest sands in many fields are as yet inadequately tested and new domes continue to be discovered.

South Texas: The greatest activity in the south Texas district during 1939 centered around Jim Wells and Duval Counties in the Frio-Vicksburg trend but considerable activity also took place in the Miocene-Oligocene trend through Nueces, San Patricio, and Victoria Counties. In all, 35 new pools or fields and 58 new producing zones were discovered. Approximately half these new discoveries are credited to surface and subsurface geology coupled with trend drilling whereas the other half of the discoveries are credited to geophysical prospecting of one kind or another. Reflection seismograph surveys, however, greatly predominated over the other geophysical methods.

One of the outstanding developments in south Texas during 1939 was the production and processing of large volumes of condensate. During the year 9 new condensate fields and 14 new condensate producing zones were discovered. More than 50 south Texas fields produced condensate during the year and by October 1 the new processing plants in operation had a daily capacity of nearly 1,000,000 gallons. In 1938 south Texas had only one small experimental plant at the Agua Dulce field in western Nueces County.

Several of the new oil fields and many of the older fields were extended either by successful outpost wells or by the discovery of new and generally deeper producing zones. Among those extended significantly are McCampbell, East Alice, South Clara Driscoll, East White Point, and La Rosa. A significant southward extension of an important producing zone was made by the discovery of oil in the Wilcox at a depth of 7,912—21 feet in the West Tuleta field of Bee County. The tendency toward expansion through discovery of additional producing zones has continued and some fields are now producing from as many as 20 zones.

Typical of many south Texas fields is the McCampbell field in San Patricio and Aransas Counties, yet it is also distinctive, as it is the first field that produces crude oil from a depth greater than 7,000 feet to receive major development. It was discovered in 1936 and by April 1939 had nearly 200 producing wells. The development has provided reasonably complete information about the occurrence of the oil, which is obtained from 4 zones in the Oligocene at depths of 6,500, 6,800, 7,100, and 7,200 feet. The productive sands are 5 to 18 feet thick and are located on a low anticline on the west or upthrown side of a fault whose displacement is about 500 feet. The closure of the anticline on the north, west, and south sides is approximately 100 feet.

During 1939 a total of 2,710 wells were drilled in south Texas and of these 1,771 were oil wells, 79 gas wells, and 860 were dry. The average depth of these wells is a little greater than those drilled in 1938. According to preliminary data issued by the American Petroleum Institute, the district produced 82,023,000 barrels of oil which, despite the shut-down period, was only slightly below the amount produced in 1938.

Active exploration in both the Frio-Vicksburg trend and in the Miocene-Oligocene trend along the coast is expected to continue. Additional oil pools at moderate and somewhat greater depths are to be expected along the Frio-Vicksburg trend. New producing zones and pools also will probably continue to be sought along the coastal part of south Texas at depths ranging from 7,500 to 13,000 feet.

GULF COAST REGION

Developments in the Gulf Coast of Texas and Louisiana and exploration for oil in the Gulf Coast of Mississippi are described in the summaries of these States under the heading "Midcontinent region."

ROCKY MOUNTAIN REGION (COLORADO, MONTANA, NORTHWESTERN NEW MEXICO, UTAH, AND WYOMING)

Colorado.—Colorado's production of oil in 1939 was practically the same as in 1938, close to 1,400,000 barrels, about half of which came from the Iles field. There was a slight increase in drilling activity over 1938. No new oil field was discovered, but the Wilson Creek field was extended, and a new producing zone was developed in the Fort Collins field, adding, according to available estimates about 2,500,000 barrels to the State's reserves. Several important but unsuccessful wildcats were completed.

The second producing well in the Wilson Creek field, Rio Blanco County, was completed in the Morrison for 400 barrels of 49° oil at 6,702 feet. This well, located about 1¼ miles northwest of the discovery well and on the opposite side of the dome, afforded valuable new information regarding the sand conditions on the dome. The discovery well, completed in 1937, produced about 130,000 barrels of oil during 1939.

In the Fort Collins field, Larimer County, an old well, deepened to test the Sundance, found water in the Sundance, but was plugged back and produced 400 barrels 31.7° oil in the Dakota sand at 4,685 feet. The well is near the crest of the structure and the producing area of the Dakota sand will probably be small. Production in the Fort Collins field heretofore has been from the Muddy sand.

In the Rangely oil district, Rio Blanco County, a new area of production was apparently opened up about a mile west of the field, the oil coming from a fracture zone in the Mancos shale.

A well on the Divide Creek structure in Mesa County, which holds the depth and altitude (9,395 feet above sea level) records for the Rocky Mountain region, was abandoned at 10,815 feet without reaching the objective sands of the Dakota, which had been estimated to lie not deeper than 10,500 feet. Failure to reach these sands was a great disappointment as the structure is one of the largest and most promising in the State.

Two more wildcat wells tested the Paleozoic rocks in eastern Colorado without success, one in Elbert County being abandoned at 7,578 feet, and one in Prowers County at 5,680 feet. A test in the Eldorado district, Boulder County, southeast of the Boulder field, was abandoned at 6,321 feet without reaching the Dakota objective. A well in Custer County was abandoned at 1,500 feet, granite having been encountered at 1,300 feet.

Montana.—Oil production in Montana rose from 4,946,000 barrels in 1938 to 5,961,000 barrels in 1939—an increase of more than 1,000,000 barrels, according to statistics of the Bureau of Mines. Drilling operations also increased considerably due in part to better marketing outlets and additional refinery facilities. About 150 wells were drilled, 115 of which produced oil. Most of the wells were drilled in and around the Cut Bank and Kevin-Sunburst fields, which produced, respectively, 3,500,000 and 1,500,000 barrels of oil. One small oil discovery was recorded for the State when a well in the West Pondera district, Teton County, obtained an initial production of a few barrels of oil from the Madison limestone, but the well was later completed as a gasser in a stratigraphically higher zone.

The principal developments of the year were in the Cut Bank—especially North Cut Bank—and Kevin-Sunburst fields, both of which were extended. It is estimated by the Oil and Gas Journal that 960 acres were added to the proven area of the Cut Bank field. In the Cut Bank field the Sunburst sand, which had not previously been an important producer of oil, was found productive over a wide area, good wells being obtained in both the northern and southern areas. The productive area immediately southeast of the town of Cut Bank, which was exceedingly active, was extended in three directions. Some of the wells in this area produced from both the Sunburst and Cut Bank sands. Many Cut Bank sand producers were completed in the southern and eastern parts especially of the South Cut Bank pool, lying in an area 4 to 9 miles south of the town of Cut Bank. In the extreme northern part of the Cut Bank field which is called the Darling pool, there was prolific development of both oil and gas in the Sunburst sand. An active drilling campaign in this extensive area of potential oil development will undoubtedly be carried out in 1940.

On the north edge of the Dry Creek field, Carbon County, a test was abandoned in the Lakota at 5,828 feet, defining the limits of the field in that direction. Three unsuccessful exploratory wells are mentioned: A wildcat well on the Grassy Butte nose, on the southeast flank of East Butte in Sweetgrass Hills, located by magnetometer work, was in igneous rock at 1,702 feet. A well on the Moss Agate structure, Meagher County, and one in the Pendroy district, Pondera County, were failures in the Madison limestone at 2,170 and 2,846 feet, respectively.

New Mexico.—Developments in northwestern New Mexico are described in the summary of that State under the heading "Midcontinent region."

Utah.—During 1939 Utah produced approximately 3,000 barrels of oil, practically all of which came, as previously, from the Virgin River field, Washington County. There was very little drilling activity in the State. No new oil discovery was made, nor was any significant dry hole completed. At the end of the year five test wells were still in operation at widely scattered localities in the State.

Wyoming.—During 1939 a total of 21,417,000 barrels of oil (Bureau of Mines preliminary figures) was produced in Wyoming, an increase of 2,500,000 barrels over the 1938 production of 19,022,000 barrels. Although final figures have not been compiled for the various fields, this increase can be accounted for by a probable increase of more than 2,000,000 barrels in production from the Lance Creek field, and an increase of 400,000 barrels in production from the Wertz field. Drilling activity, which was normally brisk during the year, increased toward the end of the year, due partly to the necessity of validating expiring leases.

No new oil fields were discovered in Wyoming in 1939, but known fields were extended and deeper-producing sands were found. In many fields old wells were drilled deeper into the producing sand, resulting in material increases in production.

The most active area of development continued to be the Lance Creek field, in Niobrara County, the majority of the wells being drilled to determine the extent of the productive area. According to the Oil and Gas Journal, this drilling added approximately 240 acres to the Sundance sand pool, and 600 acres to the Leo sand pool. A new producing sand, called by some the Joss sand and by others the second bench of the Leo, was discovered in the Minnelusa formation, below the Leo. Finding this sand productive in widely scattered localities on the west, east, and southeast sides of the field indicates that it may extend over a large area, possibly comparable to the extent of the Leo sand. Perhaps indicative of such an extension is a well in the West Mule Creek field, some 30 miles northeast of the Lance Creek field, which got substantial production at 2662–2675 feet from the Minnelusa formation. With the exception of one well drilled several years ago that obtained a few barrels of oil from the Minnelusa, all the production in the West and East Mule Creek fields has come from the shallow Dakota-Lakota sands.

Deepening operations in many of the old fields, including Frannie, Badger Basin, Lost Soldier, Wertz, Sage Creek, Osage, and LaBarge, resulted in substantially increased production. An outstanding example of this is the Wertz field, near the junction of Sweetwater, Fremont, and Carbon Counties, where the discovery of a deeper producing zone in the Tensleep increased the output of the field in 1939 to double that of 1938 and made this one of the major producing fields of the State. The northwest limit of the Medicine Bow field was defined by one well, narrowing the productive area.

A wildcat test in the Pinedale district, Sublette County, which established a new depth record of 10,003 feet for Wyoming and ranks as the third deepest hole in the Rocky Mountain States, is reported to be bottomed in Fort Union beds of Tertiary age. The well will apparently produce gas under a very high pressure but the volume remains uncertain pending further testing. It was located by geophysical methods, primarily seismograph, a few miles off the southwest flank of the Wind River Mountains, in the extreme north end of Green River Basin. A deep test in the Dry Piney district was abandoned at 8,194 feet. Extensive geophysical work has been carried on in southwestern Wyoming (Uinta and Lincoln Counties), the reported objectives being structures where the Park City and Weber formations are within reasonable drilling depths.

In eastern Wyoming, a deep test on the Ant Hills structure was abandoned at 6,825 feet, after drilling most of the Pahasapa lime. This, with the East Lance Creek, Old Woman anticline, Hat Creek, and Magoon structures, makes 5 structures east, north, and northeast of the Lance Creek field that have now been drilled into the Minnelusa without discovering anything of importance. After extensive seismographic work in the area, a well was drilled on the North Geary dome to 7,331 feet without encouraging results; it will be drilled deeper.

Two conspicuous features of development in Wyoming were (1) the approval of a plan for unit operation of the principal producing sands in the Salt Creek field, and (2) the construction of a 438-mile pipe line from Fort Laramie to Salt Lake City, traversing all southern Wyoming and serving also the fields of northwestern Colorado.

California.—The period of discoveries that began in 1936 continued during 1939. In the San Joaquin Valley new fields were discovered. In several fields in the Los Angeles Basin and in the coastal district productive limits were extended and in one area a deeper zone was developed.

According to preliminary data issued by the Bureau of Mines, California production during 1939 was 224,354,000 barrels, 10 percent less than in 1938. Six of the twelve major fields in the United States that produced more than 10,000,000 barrels are in California. (See table 2.) The average daily production in California was about 614,600 barrels. As in preceding years production was curtailed by mutual consent of the operating companies. According to figures of the oil umpire, at the beginning of 1939 estimated daily capacity was 1,431,000 barrels. Throughout the year estimated daily capacity was of the same order of magnitude.

Available estimates indicate that developments during 1939 continued the trend of adding a net gain of reserves comparable to the annual demand for California crude.

The total number of wells drilled was 865, 31 percent less than in 1938. Of these wells 29 percent were abandoned as dry holes as compared with 21 percent in 1938.

Four new fields, all in the San Joaquin Valley were discovered: Northeast Coalinga, Paloma, Strand, and South Mountain View. Three of these fields were found by geophysical prospecting, supplemented generally by subsurface geological studies. The fourth field, South Mountain View, was found by subsurface geological studies.

The Northeast Coalinga field is located on the west border of the San Joaquin Valley, 4 miles north of the East Coalinga field, which was discovered in 1938. The discovery well was completed in April. By the end of the year 9 producing wells were completed and 7 others were nearing completion. As in the East Coalinga field, high yields of light oil are obtained from the Gatchell sand (Eocene). In the new field the Gatchell sand is at a depth of about 8,000 feet. The upper part of the sand contains so much gas that it is cased off to lower the gas-oil ratio. The Northeast Coalinga field appears to be located on a broad southeastward-plunging anticlinal nose separated from the East Coalinga field by a syncline. A well drilled recently halfway between these 2 fields failed to find production in the Gatchell sand.

The Paloma and Strand fields are located at the south end of the San Joaquin Valley, Paloma 2 miles east-southeast of the Buena Vista Lake gas field, and Strand a mile northeast of the Canal field. In the Paloma field, the southernmost field so far discovered in the central part of the valley, the productive Stevens sand (upper Miocene) is penetrated at a depth of 10,000 feet. The Stevens sand also is the productive sand in the Strand field, but in that area it is found at a depth of a little more than 8,000 feet. Both fields are located apparently on low anticlines. The strand field may represent an extension of the Canal field.

The South Mountain View field, also known as the Arvin field, is a mile south of the southernmost productive area in the Mountain View field on the east border of the San Joaquin Valley. Oil is obtained from the Chanac sand (upper Miocene or lower Pliocene) at depths ranging from 6,000 to 7,500 feet. The oil is thought to have accumulated against a fault, limiting production to the east, and a structural irregularity or change in character of sediments appears to separate the field from the Mountain View field. The productive area is evidently small and may eventually be classified as an area of the Mountain View field.

Active development continued in the East Coalinga field, which is expected to be one of California's most important fields. By the end of the year 47 producing wells were completed and the limits of production were extended. The area of Eocene production in the Kettleman Hills North Dome field was extended southward. Search for Eocene production is expected to extend farther southward and also northward along the west border of the San Joaquin Valley. Drilling activity continued in the recently discovered fields in the central part of southern San Joaquin Valley, where oil is found in deep Miocene sands. In most of these fields productive limits are not yet well defined.

The Montebello and Wilmington fields were the areas of most active development in the Los Angeles Basin. The Montebello field was extended westward and a highly productive new zone, the eighth zone, was discovered. In the Wilmington field most of the drilling activity was in the prolific Long Beach harbor district. The Dominguez field was extended westward. Drilling activity at Torrance, at a high level in 1938 and the early part of 1939, diminished. Geophysical prospecting and wildcat drilling in search of new fields are being carried on in the extreme eastern part of the basin.

In the coastal district the Ventura Avenue field was extended northward. In that field successively deeper Pliocene zones have been developed and search for Miocene production may be expected. Several wells of high yield resulted from minor drilling activity in the Santa Maria Valley field. However, owing to slight demand for heavy crude, there was little activity in that field and in other parts of the Santa Maria district.

STATEMENT OF WILLIAM J. KEMNITZER, ECONOMIC GEOLOGIST

Mr. Cole. Mr. Kemnitzer, we will hear you.

Mr. Kemnitzer. Mr. Chairman and members of the committee, my name is William J. Kemnitzer. In accordance with the usual procedure, I shall, with your permission, state briefly my qualifications. I am an economic geologist and have been a student of the petroleum industry for about 15 years. I was graduated from Stanford University with the degree of A. B. in geology in 1923.

After some years of employment in oil fields in the United States and Mexico I began to devote my entire time to petroleum research in 1927. Since that time I have published two books on the subject of petroleum: One dealing mainly with the geology and technology of production; and the other, with monopoly in the petroleum industry. Since 1937, I have been, and at the present time am engaged principally in collecting material for a new book on international petroleum trade. As a part of this work, I spent 5 months in Europe during the summer and fall of 1937, making a special study of petroleum in the Soviet Union.

I have sometime been employed by the State of California and by the Federal Government on petroleum matters, notably by the latter as expert witness in the "section 12," *Elk Hills case* involving title to lands in the Naval Petroleum Reserve. Although I cannot and do not speak for the Navy, I might add that I am a lieutenant commander in the United States Naval Reserve as a petroleum technologist. I appear before you as an individual to give testimony in opposition to H. R. 7372, titled the "Petroleum Conservation Act of 1939."

This bill is put forth as a petroleum conservation measure. Essentially, it would have the Congress find that waste in the petroleum industry of the United States is inimical to the national defense and harmful to interstate commerce. On the basis of this proposed finding, the policy of Congress is declared to be to further the conservation of petroleum by eliminating the waste asserted. Accordingly, the bill provides for the appointment of a Commissioner and places mainly in him the power and authority to execute the policy declared.

Under the broad terms of the act, the Commissioner can control practically every operation in the petroleum industry from the drilling of oil wells to the manufacture and use of refined products anywhere in the United States regardless of State laws. In short, the bill would set up, in the name of conservation, a virtual "czar" of the petroleum industry.

The bill is said to have originated in the Department of the Interior. It is under this Department that the proposed act would be administered should it be made into law and, consequently, this Department is backing the bill.

The Department of the Interior believes that the production and storage of petroleum under supervision of the State governments is wasteful. It believes that under supervision of a Federal office established within the Department of the Interior, the production and utilization of petroleum will not be wasteful.

The only question to decide in considering this proposed legislation would seem to be whether the Department of the Interior could do a better job of waste prevention than the States. But this is not the only question. Assuming that the Department of the Interior could do a better job than the States, the questions to answer are: By how much would the ultimate recovery of petroleum be increased? And by how long would the utilization of petroleum be extended? Then, even conceding that the ultimate recovery of petroleum might be larger and that the time of its use might be longer under the rule of the Department of the Interior, the final and most important question to ask is: Would it be wise from the standpoint of our democratic political philosophy to take power and authority away from the States and turn it over to an office of the Federal Government?

Although the term "conservation," as such, unfortunately is not defined in the bill, its meaning is implied to be "the elimination of wasteful methods and practices * * * insofar as those methods and practices are avoidable * * *." Most persons will not find fault with that definition per se, and will agree that conservation for the general welfare as a national policy is a good thing. But our problem is to determine how far we may go with a conservation policy without infringing upon our constitutional privileges and endangering our institutional standards, the preservation of which seems far more important to the general welfare than the mere conservation of petroleum.

The bill has been cleverly drafted. Peculiarly, it creates a case for itself instead of an actual case warranting the bill. It does not find straightforwardly that any positive physical waste which is prejudicial to the general welfare is actually occurring in the petroleum industry of the United States. Rather, in a subtle, periphrastic sort of way, the bill has the Congress find "that in the production and storage of petroleum from deposits within the United States, the employment of methods and practices which are wasteful * * *" is inimical to the national defense, and so on.

For the bill to have found positively that any real waste was occurring within the petroleum industry of the United States would have been an inaccurate and bold assertion troublesome to prove because such purely physical waste as does occur is usually temporary, difficult to identify, insignificant in amount, and impossible to measure. It is no wonder then, that we have a finding which is equivalent to saying that if, when, and as wasteful methods are used, the national defense is in danger and interstate commerce is harmed. This is indeed more of an assumed anticipation than a finding of fact. Nevertheless, it is upon this flimsy finding that the Congress is asked to base far-reaching and probably precedent-making legislation.

After thus finding, the bill provides for the appointment, without regard to the Civil Service laws, of a political Commissioner to head an Office of Petroleum Conservation within the Department of the Interior and grants this Commissioner power and authority to define, determine, and declare waste pretty much as he pleases. In other words, the bill postulates waste for its excuse and then provides the authority for making real that which was originally assumed. Thus, although there may be actually little or no real physical waste before the bill becomes law, once it is enacted into law, there can be no end of waste because, under the terms of the act, that which may constitute waste is practically without end.

The acceptance or rejection of this bill will depend largely on how we interpret waste and on what we believe to be the necessity for and the means of eliminating waste as we conceive it. Most persons are agreed that in the production and storage of petroleum the highest efficiency possible under known methods and practices should be attained. Indeed, most, if not all, of the oil-producing States, whether or not they have "proration" laws, already have adequate conservation laws to enforce the application of methods and practices to prevent physical waste.

Mr. COLE. Do you mean by that, that the administrator under such an act would just declare that waste existed for the fun of it? I do not understand what you mean by that.

Mr. KEMNITZER. I think I cover that point in detail, on the next page. If I do not cover it satisfactorily, I shall be willing to expand it.

Mr. COLE. Very well.

Mr. KEMNITZER. There are, however, those who are not satisfied with the ordinary conception of waste; that is, with the prevention of physical loss or destruction without use. There are persons, for instance, who believe that no matter how efficiently crude petroleum is produced, if it is not subsequently processed until it yields products which do not compete with coals or other more abundant natural hydrocarbons, then, at least, some petroleum is wasted. Others believe that to export either crude petroleum or refined products is wasteful. Others believe that unless oil fields are developed as single properties, waste will result. Others believe that unless production is "balanced" with an estimated demand and prices are "stabilized" waste will result. Others believe that competition itself fosters waste and even go so far as to advocate and to defend monopoly with this thesis. Others believe that unless oil is "prorated," waste will result. A hyperconservationist might even object to producing any crude petroleum at all until depletion of existing reserves was imminent or supplies from foreign sources were economically unavailable. Thus, there is no end to what one's conception of waste might be, and we shall see that under the terms of this bill waste may be practically anything.

One's conception of waste, in the last analysis, is dependent on his knowledge or belief of the ultimate quantity of available raw materials from which gasoline and other consumable hydrocarbon products may be manufactured. Some people believe that crude petroleum in natural reservoirs in the rocks of the earth is, and always will be, the only feasible source of supply. Other people believe that this notion is not true and that our huge supplies of coals and oil shales other sources from which gasoline and other hydrocarbon products may also be derived, both supplement and augment the currently usable supply of crude petroleum to insure us of a practically inexhaustible total reserve.

The people who count only on crude petroleum in natural reservoirs are mostly the ones who wish to throttle the petroleum industry with rules and regulations which they somehow believe will increase the recovery of petroleum and will extend the time of use thereof. The people who recognize the adequacy of our total resources are mostly the ones who see no reason why the industry which, after all, must be credited with the development and maintenance of the greatest petroleum reserves the world has ever known should have that responsibility taken away from it and handed over to an inexperienced group of alarmists.

We have always had controversy over what should be the degree of conservation in the petroleum industry. There have always been those who said we would run out of oil within a few years. There have always been those who said we would not. No doubt, we have had sincere crusaders for conservation, but we have also had the hypocrites who have applied the processes of conservation to hide monopolistic machinations, to further personal ambitions, or to carry out other false purposes. But withal, the controversy remains and always will remain for the basic reason that we do not know and never will know the ultimate quantity of our petroleum resources. It is this unknown and unknowable factor, which, like the riddle of creation itself, permits the ignorant to argue with as much authority as the learned. Therein lies the ability of the conservation spellbinder to excite the uninformed mind of a patriotic public; and therein lies the danger of many wrongs being committed and mistakes being made in the name of conservation.

The question to answer in considering this legislation is not, How much petroleum have we? That question cannot be answered. From a practical standpoint the significant query should be: Will larger developed reserves be maintained and more efficient and economical production and utilization be effected under Federal control of the entire industry than under under competitive industrial control with State supervision to prevent physical waste? In other words, can we expect a politically appointed commissioner, as provided for in this proposed act, to regulate both the physical and the economic elements of the petroleum industry in a manner more conducive to a better national defense, a smoother-running interstate commerce, and with more fairness among competing factions than the ordinary economic force of price as determined by the relationship of demand to supply in a free market? I, for one, am inclined to believe we cannot.

A boast of the Soviets is that under their form of government which does not recognize the private ownership of property and does not permit a private competitive system, the conservation of petroleum in their country is possible to a higher degree than in the United States where these so-called capitalist institutions are fundamental. Actually, the oil fields of the Soviet Union are developed under conditions quite similar to those which the provisions of this bill would effect; namely, the development of oil fields as single-property units with the production and utilization of petroleum regulated by a single governmental authority.

Yet, after more than 20 years of effort under these so-called ideal conditions, and with the aid of many American technologists, the Government of the Soviet Union, possessing probably the largest petroleum resources of any country in the world, is strikingly inefficient in the production of petroleum and unable to supply its own needs. Even before the present war, the Soviets were rationing gasoline in Moscow at unreasonably high prices and had to resort to imports from the United States. Similarly, since expropriation by the Government of Mexico of most of the privately owned oil properties in that country, the efficiency of production has fallen to a low ebb and the entire industry there, is in a serious plight.

It is not to be denied that petroleum is being saved, as it were, in the Soviet Union and in Mexico while our industry is flourishing. But such a situation in these countries can hardly be interpreted one of conservation as contrasted to one of waste in the United States.

Merely to produce oil in excess of someone else certainly, in itself, cannot be deemed wasteful. On the contrary, competition is essential to the adequate development and maintenance of petroleum reserves; conservation should properly be solely incidental to the competitive effort. When the situation is reversed, as it has been in the Soviet Union and in Mexico and as it will be in the United States, if this bill is passed, the result is bound to be adverse.

Thus, it is quite possible that in our zeal to conserve petroleum, the restrictions which this bill would place upon the production and utilization of petroleum may bring about the very scarcity which the bill seeks to avert. Moreover, in our eagerness to protect commerce the expansive and discretionary power and authority which this bill would place in the hands of a single individual may result in the very restraints in commerce and discriminations in trade which the bill seeks to prevent.

Your attention is not called to conditions in the Soviet Union and Mexico with the idea of criticizing the governments of those nations in taking over foreign-owned private property for the national welfare or in defense of the monopolistic interests which formerly operated in those countries. Certainly those countries had, as we now have, a monopoly problem as well as a conservative problem. But we, unlike them, need not make the mistake of jeopardizing our form of government in efforts to solve either the monopoly or the conservation problem. We need but enforce our antitrust laws and encourage morally rather than supercede legally the States and the industry in their efforts to prevent waste.

Under the provisions of this act, the entire gamut of waste conceptions may be run regardless of how fantastic such notions of waste may be. Besides the ordinary conceptions of physical waste, the act provides that—

> Physical waste of crude oil shall be deemed to include the loss or destruction of crude oil after recovery thereof such as to prevent its application to useful purposes * * * (sec. 5, subsec. b, item 1).

Under this provision, what is to prevent the Commissioner from decreeing how, when, and where crude oil may be refined and how, when and where either crude oil or refined products may be utilized? The Commissioner might, for instance, prohibit the manufacture of fuel oils on the theory that coal, natural gas, or water power could be used instead of fuel oil and, therefore, decree that the destruction of crude oil into fuel oil served no useful purpose. On the same theory he might prohibit the exports of both crude oil and refined products.

In addition to the above all-encompassing proviso, the bill provides that—

> The Commissioner shall have the power to define technical terms used in this act insofar as such definitions are not inconsistent with the provisions of this act (sec. 3, subsec. b).

This power would seem to have a limitation placed upon it, but in reality, there is no limitation because the definitions and standards in the act, themselves are often vague, uncertain, and without limit.

Also, the act provides that in making investigations to determine whether operations are effective in preventing avoidable physical waste of crude oil, the Commissioner shall consider among the usual factors of production "other characteristics and conditions of the source of supply and production therefrom." Where is the limitation to the term "other characteristics"? This blanket term "other characteristics" permits the Commissioner to go far beyond just purely physical considerations of waste and opens up unlimited opportunity for economic discrimination in the production, transportation, refining, and utilization of petroleum not only as between States, fields, and wells, but also as between the various oil companies and other operating units.

These three provisions alone enable the Commissioner to place such a wide interpretation upon the term "waste" that he could control virtually all operations within the petroleum industry. Thus the bill is not simply one to eliminate purely physical waste in the production and storage of petroleum but, it is, in my judgment, rather artfully one to enable an absolute authority to regulate the entire economic life of the petroleum industry.

The basic excuse for this bill lies in the contention of its proponents that the industry and the States have failed to eliminate waste in the petroleum industry of the United States. Unless there is some significant factual evidence to support this claim, there is no good reason for even considering this legislation. Obviously, the burden of proof is upon the proponents and, naturally, they try by every manner of means to show waste. It is here that we must be especially careful in our appraisals and judgments of what does and what does not constitute real waste lest we confound and confuse the economic with the physical to give mistaken and probably regrettable approval to something which we neither need nor want.

The amount of real physical waste in the petroleum industry of the United States is difficult if not impossible to portray quantitatively. If such waste could be identified and measured as a whole in terms of total production, the small percentage of crude oil actually lost or destroyed within the petroleum industry of the United States would be unimpressive as an argument for this bill. Therefore, some more concrete and startling evidence of waste must be presented and the Department of the Interior has a stock argument for waste which, however fantastic, is, nevertheless, often convincing to the layman. Briefly, it is that when the domestic output of crude oil exceeds an estimate of demand for that oil made by the Bureau of Mines of the Department of the Interior, the excess is overproduction and, according to them, overproduction is waste. Thus, these estimates of demand, which are almost always far below the actual total demand, function as the chief criterion for the contention of waste. Under the provisions of this act, these estimates of demand could continue to be made and there is no reason to believe that they would not continue to provide the chief evidence of waste. Therefore, it is essential that we understand them.

Each month the Bureau of Mines for some reason makes a forecast of demand for crude oil in the United States. This forecast is broken down to the "requirements of States of origin." Although these forecasts are said not to be recommendations for production but represent the projection of actual market demand trends by States, nevertheless, whatever they are, the contention is that production in excess of them is waste.

It is difficult to understand this line of reasoning because these forecasts are not based upon any technologic investigations of the waste factors of production. They are based solely upon trade surveys of the economic factors of demand. They are not the results of any engineering examinations whatsoever. They have nothing to do with the most efficient production of oil or gas from wells. They are the mere desires of what the domestic production of crude oil is wanted to be; not what the production of crude oil ought to be.

Simply because domestic production exceeds an estimated demand is no indication that oil is wasted. None of the oil produced in excess of the forecast is necessarily lost or destroyed. All crude oil produced is either used or placed in storage and any oil produced in excess of the estimated figure goes right along with the total output from which it is indistinguishable and inseparable.

Think of the absurdity of the mere balancing of the domestic production of crude oil with some estimated forecast of demand as a conservation measure. Under the provisions of this proposed act, the demand for crude oil could be fixed. If demand is fixed and production is fixed to that demand, then overproduction is fixed. If overproduction is waste, then waste is fixed. In other words, much if not all of the waste which this act would depict is really nothing but a fictitious waste created by the provisions of the act itself.

The boast has been made repeatedly that these forecasts are remarkably accurate; that they always come within a few percent of the actual total demand. That boast is beside the point and begs the question. The point is that these estimates are not based upon physical-waste factors and have nothing to do therewith. Efforts to restrict production to them in the name of conservation are really nothing more than attempts to regulate trade under a false pretense. There is no legislative authority for these forecasts, but passage of this act would clothe them with greater respectability. This, of course, is only one example of how far "waste" may be stretched under the provisions of this proposed act.

Now recognizing the fallacy of the forecast, should the so-called "failure" of voluntary curtailment of production in a few fields in one or two States warrant legislation for Federal control of the entire petroleum industry? The mere fact that production in a few fields from time to time exceeds voluntary allotments based on forecasts of demand which have nothing to do with waste, does not and cannot mean waste. It is perfectly possible to produce petroleum either above or below any allotment which is not based on waste factors, with the highest of efficiency.

Even if we assume that the allotments based on these forecasts have a direct bearing on waste—which they have not—an examination of the statistical facts will reveal how unimportant such alleged waste really is. Take, for example, the 1,000 barrels daily produced above the forecast for the United States as a whole during the year 1939. That amount is less than one-tenth of 1 percent of the total national output. Take the 23,000 barrels daily produced above the forecast in California during the same year. That amount is less than 4 percent of the total State output. By how much further do the proponents of this bill think an office of the Federal Government could reduce those percentages? And if that office could reduce them to zero, would it necessarily be reducing "waste"?

Even if we assume that passage of this act would actually conserve petroleum, the staff necessary to enforce properly its provisions would be unavailable; and if the staff were available the cost of maintaining it would be excessive. By the provisions of this act there is created an Office of Petroleum Conservation in the Department of the Interior. This office is under the direction of a Commissioner appointed by the President. Two associate commissioners may be appointed by the Secretary of the Interior, and in addition, the Secretary may appoint such deputy commissioners, experts, and other employees as he deems necessary without limit either as to number or compensation.

If the purpose of this act is really limited to the elimination of physical waste as the proponents contend, the staff necessary to locate, identify, measure, and superintend such activities would run into several thousands. Who would watch the drilling and completion of wells to see that physical waste was eliminated? Some 25,000 new wells are completed each year, not counting redrill jobs. It is difficult to see how less than 1,000 trained geologists and engineers could watch these wells. Who would watch the producing wells to see that the gas-oil ratios and other important efficiency factors were just right. With these factors variable from well to well and from time to time, it would take at least 4,000 trained men to watch the 380,000 producing wells. Then, how about men to watch and gage storage; and persons to make records and compile statistics, write reports, and so forth? And what of enforcement agencies? A vast bureau of at least 6,000 persons would be necessary, and I dare say there are not that many trained persons available, unless they are taken away from the industry and the States wherein they are now employed. If any attempt were made to carry out the provisions of this act with a lesser force, obviously the purpose of the act would not be achieved.

Since the type of person necessary for such work need be highly trained and experienced, it cannot be hoped that the salaries of such persons would average much less than $200 a month. With 6,000 of these, the annual cost of such an office would be at least $15,000,000. This item together with the reduced output to result from enforced restriction of production, and with the increased prices to result therefrom, would indeed be added burden upon the consumer and taxpayer.

Restriction of production to any preconceived demand no matter for what purpose is, of course, both trade-restraining and price-fixing. As such the restriction of production is prejudicial to the consumer who is not even considered in this bill. The defensive argument for this resultant price-fixing is, of course, that any output in excess of the forecast demand is waste; to eliminate the waste, production must be made to "balance" the forecast; when this is done, oil is conserved; and if in so conserving oil, prices should happen to be stabilized, then stabilization and conservation are concommitant; that is, the one cannot be achieved without the other. Thus, price-fixing is justified and the procedure for so doing is vindicated.

The minute the Government regulates production, it gets into price-fixing.

Mr. Cole. That applies to the States also.

Mr. Kemnitzer. Yes, sir.

Mr. Cole. You are opposed to State regulation as well as Federal?

Mr. Kemnitzer. I am, outside of the realm of purely physical prevention of waste. I think that my record is clear on that point.

Mr. Cole. Do you object to the recent decision by the State——

Mr. Kemnitzer. I did.

Mr. Cole. Let me ask my question.

Mr. Kemnitzer. I answered it; I said yes.

Mr. Cole. I want to finish my question; until I do, you don't know what I mean.

Did you oppose the recent effort of the State of California to regulate production in the form of the Atkinson bill which was defeated last fall?

Mr. Kemnitzer. Yes, sir; I did.

Once in this business, the Government is not going to fix prices according to economic requirements but rather in harmony with the political demands of the situation. Governments seldom find that prices to producers are too high or that prices to consumers are too low. With the producer always clamoring for higher prices; the consumer for lower prices; the middleman for wider margins; labor for higher wages; stockholders for larger dividends; and oil companies for more profits; where is Government to stand? Obviously, once the Government gets into regulation production and fixing prices, all of the interested parties of the industry are going to bring pressure to bear on the Government.

It is impossible for the Government to arrange prices and price relationships in the petroleum industry or in any industry with the nicety and the equity of the economic force of the natural relationship of demand to supply in a free market no matter how completely disinterested and above reproach Government officials might be. Even the ablest economists and statisticians in the country could not do it. They would not have the knowledge or foresight or alertness to fix and change prices and to establish price relationships to the satisfaction of everyone. Herein lies the real danger of a conservation office degenerating into a political bureaucracy with consequent economic, social, and political chaos.

The function of our Government is not to fix prices but to maintain conditions of competition under which prices determined by the free play of demand on supply in an open market reveal the truth about production and reserves. Prices so determined, perform an essential barometric and stabilizing function. Prices may soar at times, but it is these abnormal prices which draw new producers into the field, speed discovery, increase reserves, and assure a supply. Subsequently prices may drop so severely that marginal producers are forced out of business, but it is just as important that capital and labor should be forced out of lines when and where they are not needed as they shall be forced into lines when and where they are needed.

Government conservationists become unduly concerned to prevent either sudden advances or sudden falls in prices. Their production control with resultant price-fixing tends to conceal the truth about conditions and to prevent or retard necessary adjustments in the structure of discovery and production. Free markets are essential to the functioning of the capitalist system and functioning of the capitalist system is essential to the maintenance of petroleum reserves. We cannot place the petroleum industry in a Government strait jacket and expect it to work properly and to insure us at all times of a maximum supply.

It seems strange that hardly anybody outside the Interior Department has appeared in support of this bill. Practically all of the oil-producing States have opposed it and certainly the oil-consuming States will object to it if for no other reason than it means inordinate prices to them. Although most of the petroleum industry are against the bill, the largest and most powerful oil companies have not actively resisted it, and it may be that the larger international oil combines even favor it sub rosa. At least, it is conceivable that the bill would favor them at the expense of domestic operators and consumers because the more domestic production is shut in, the less competition these international combines have from domestic operations and the more oil they can bring into this country to sell at noncompetitive prices.

Mr. Cole. What do you mean by international oil combine?

Mr. Kemnitzer. I have reference to the "Big Three"—the Anglo-Iranian; Royal-Dutch Shell; and Standard groups.

Mr. Cole. If they are for this bill, you are the first man who has said so.

Mr. Kemnitzer. Well, it may come out later on.

Such combines may figure, and perhaps correctly, that they could prevail upon an office of the Federal Government to regulate production in the name of conservation, of course, more in accordance with their ideas than they can now prevail upon the individual States to do so. But such an attitude on the part of the international oil combines, if that it be, is short-sighted and dangerous not only to themselves but also to all other operators and the public at large.

Private interests make a mistake when they supplicate governments to assist their industries no matter for what purpose. The executive branches of Government by nature desire always more money, more power, and influence and their management of giant industries insures these things to them. From what has taken place in certain other counties in the last decade we may deduce that it is almost axiomatic that when private industry asks too many favors of government, private industry is as good as gone. The industries are at first usually mildly regulated, and even state supported, but subsequently they are "socialized" and finally taken over completely by the central government whence private property rights and other democratic institutions become a mere rhapsody of words.

We, of course, need to maintain adequate reserves of petroleum for the national defense and the general welfare. Hardly anyone disagrees with that premise. But the contention that absolute regulation of the petroleum industry by an office of the Federal Government is the thing with which I cannot agree.

When one notes the inconsistency with which the Department of the Interior deals with this important problem at the present time he cannot help but doubt that any improvement is likely to take place once the provisions of this act are placed in that Department's hands. For instance, in addition to the trade-restraining, price-fixing, and monopolistic influence of the forecasts of demand assumed by this Department, it is with astonishment that I note the Department of the Interior will open up 3,800,000 acres of the public domain in 15 States to private oil and gas prospectors on July 1 next. If our reserves for the national defense are really so deficient as this Department passionately contends, then why not set aside these potential oil and gas lands of the people exclusively for the national defense?

But even if the Department of the Interior would exercise the wisest and most competent judgments in dealing with a conservation policy, the provisions of this act per se, in my opinion, could neither effect an increase in the ultimate yield of petroleum nor extend the time of use thereof. Nor will they permit protection of or improvement in interstate commerce. On the contrary, I believe the provisions of this act will bring about destruction of the one essential thing necessary to the development and maintenance of adequate petroleum reserves for the national defense and the general welfare; namely, the competitive system. And with destruction of that system, the decay of our present form of government is found to follow.

If we have reason to believe that the Federal Government must curtail the use of petroleum, that we must prohibit exports or otherwise regulate trade, or that it would be to our advantage to create a State-supported private monopoly, or even to nationalize the petroleum industry, let us say so by submitting legislation directed specifically and explicitly to those ends. Then the people and the Congress will know what they are doing. But let us not pass legislation purporting one thing and bound to effect another. Any legislation which places virtual control of a 16-billion-dollar privately owned industry in the hands of a politically appointed person is dangerous legislation and may be the wedge leading to a form of government contrary to the ideals of a democratic people and prejudicial to their general welfare. Our problem is not only one of maintaining reserves of petroleum for the national defense of geographic boundaries but is, obviously, a still greater one of maintaining reserves of a political philosophy for the national defense of democratic ideals.

Thank you.

Mr. Cole. Thank you.

We will hear Mr. Schock.

STATEMENT OF CLARENCE SCHOCK OF MOUNT JOY, PA., REPRESENTING THE INDEPENDENT PETROLEUM JOBBERS ASSOCIATION OF PENNSYLVANIA

Mr. Schock. Mr. Chairman and members of the committee, my name is Clarence Schock of Mount Joy, Pa. I am president of the Schock Independent Oil Co. which is a successor to an oil-jobbing business that began in 1876. I have been associated with it since 1886. During all of that time the business has operated as an independent oil-jobbing business. Today I am appearing here as a representative of the Independent Petroleum Jobbers Association of Pennsylvania.

I am not going to bother you with figures and prices. The general principles involved are so vital to the general welfare and to the restoration of free enterprise in the oil industry that nothing further should be necessary to convince you that it is time to call a halt on granting special privilege to anyone in the oil industry and to withdraw that already granted.

H. R. 7372 is a voluminous document of 25 pages but the kernel of it you will find on page 25 in section 19. This section if enacted will make the Connally law permanent, an end which has been vigorously sought by the masters of the oil industry since 1933. The provisions of the Connally law were a part of N. I. R. A. from 1933 to 1935. The Connally law was enacted as an emergency measure effective from 1935 to 1937, from 1937 to 1939, from 1939 to 1942.

Let us beware lest much of this opposition to H. R. 7372 is not simply camouflage enacted for the purpose of making it appear that a vote in favor of H. R. 7372 is a vote against monopoly. It is probable that the big oil companies will gladly endure the "black panther" of the Interior Department if they can have the Connally law made permanent as provided in section 19 of H. R. 7372.

Mr. Cole. Does it not go further than the Connally Act?

Mr. Schock. My recollection is that this bill and section 19 makes permanent the Connally law and I am talking against the Connally law. I thought that was a part of the subject.

Mr. Cole. Yes; I think you are right; but I think that this goes a little bit beyond that. It is broader than the Connally law; prohibits shipment of oil produced in violation of the laws of the State and of this law, does it not? Do you have a copy of the bill before you?

Mr. SCHOCK. Section 19 certainly is a permanent extension of the Connally law.

Mr. COLE. Is it not more than that?

Mr. SCHOCK. It is more than that; yes, sir. But, it does extend the Connally law.

Mr. COLE. Yes; it extends the Connally law, but I gather from what you have said that you are assuming it merely makes the Connally law permanent.

Mr. SCHOCK. Section 19 does. That is my belief. That is the most important part of the bill.

Mr. COLE. I thought maybe you had overlooked that part of the bill.

I think I understand you.

Mr. SCHOCK. My whole paper is against the provisions embodied in the Connally law.

The Connally law and H. R. 7372 forbid the movement in interstate commerce of any petroleum and its products produced contrary to State laws.

Mr. COLE. What I meant was I assumed you were overlooking something in the statement you are now making.

Mr. SCHOCK. H. R. 7372 does include additional provisions, that is true, but still it is true they both do prohibit movement in interstate commerce of any petroleum or its products produced contrary to State laws.

Mr. COLE. All right.

Mr. SCHOCK. Accordingly, it should be determined whether such State laws are in the public interest from a Federal standpoint. Producing States have entered into a compact, known as the Interstate Oil Compact for the declared purpose "to conserve oil and gas by the prevention of physical waste thereof from any cause." A commission consisting of one commissioner from each State determines how to carry out the purposes of the compact. Action by said commission requires a majority vote of the commissioners and "a concurring vote of a majority in interest of the compacting States," "such interest to be determined as follows; such vote of each State shall be in the decimal proportion fixed by the ratio of its daily average production during the preceding calendar half year to the daily average production of the compacting States during said period." This compact has been approved by Congress. Congress has power to approve or disapprove. Under H. R. 7372 the Federal Government will permanently approve the purpose of the Interstate Oil Compact and will become a party to the compact.

Today State proration laws limit production to meet demand. Volume of production is permitted to meet total foreign and domestic demand but there is no surplus production to provide competition in price. The Interior Department makes monthly forecasts of demand. The States allot to each other an allowable production, which allowable for each State bears the same relation to total demand forecast by the Interior Department as the total potential production of each State bears to the total potential production of all the producing States. Thus no more is produced than demand requires. There is no possible surplus to cause competition. The owners of crude oil are able to get whatever price they agree to charge and even if there is no agreement about price, every barrel produced can be sold and the seller can exact the price he demands if the buyer cannot use a substitute for petroleum. No less quantity is produced than if there were no proration laws; but the price is stabilized. There is no provision in H. R. 7372 prohibiting a continuance of this evil.

Advocates of present State laws contend that their purpose is conservation of an irreplaceable natural resource. The cry of conservation has never been heard in our land, except when there was a flood of crude-oil production. The time when such an honest cry for conservation of our natural petroleum resources should occur is when we have great difficulty in finding enough crude petroleum to meet demand. Whenever petroleum was scarce and prices rose skyward the producer was satisfied and did not demand of the Federal Government or the State governments that they aid in conserving this "irreplaceable natural resource."

But just as soon as and whenever the supply of crude oil exceeded the demand therefor, then we have heard the cry from the producers of crude oil that something should be done to conserve this great natural resource. At such times the price of crude oil was always low. The circumstantial evidence is, and candid producers will admit it, that the real purpose is stabilization of price. The group whom I represent declare that the Interstate Oil Compact and the State proration laws constitute a conspiracy in restraint of trade, a burden upon interstate commerce.

Under H. R. 7372 an agency of the Federal Government may become one of the conspirators, thus annulling antitrust laws and freeing would-be monopolists from responsibility. Instead of the Connally law permitting States which produce crude oil to control production and price, there should be a law prohibiting the movement of any crude oil or its products from any State which undertakes to control production of crude oil.

If we want true conservation of crude oil it can be accomplished by true Federal conservation laws which should specify approved methods of production of crude oil and should forbid movement in interstate commerce of any crude oil produced in States which fail to comply with such Federal conservation laws. Such conservation laws should preserve competition and contain regulations similar to the following:

(*a*) Forbid, during periods of flush production, the flow from any crude oil well of any quantity of crude oil in excess of the amount required to fill orders for supplies for immediate shipment.

(*b*) Prohibit storage of crude oil by refiners in excess of quantity required to meet requirements of refiner for a time definitely specified in the law.

(*c*) Prohibit storage of crude oil by others than well owners and refiners in excess of quantities required for shipment within a time specified in the law. This is important.

(*d*) Place no limit on the amount of oil that any producer may take from any well.

(*e*) Require in all flush production fields that all oil wells shall have the outlets thereto constructed so that the flow of oil can be controlled by valves as is the custom today in Texas and other oil producing States.

The regulation herein suggested is based on the theory that the oil reserves beneath the surface of the ground cannot be proven to be owned by any private owner of land, for the obvious reason that nobody can say definitely where the crude oil which flows from a well comes from and nobody can prove who owned it. It may come from beneath the land of a neighbor or a neighboring State. It may come from underneath land beyond the border of the country, or from underneath the open sea. Nobody knows where it comes from. Accordingly, nobody owns it. The first person that can prove ownership is the person who first recovers it above ground.

Now, if we say by law to the person who is able to recover this crude oil above ground that he may not possess any more of it on hand than he is able to sell for use for immediate requirements, than as fast as he is able to sell for immediate requirements, he should be permitted to take additional crude oil out of the ground. The oil can be retained in the reservoir underground by the operation of a simple valve control which, when open, will deliver the oil faster than any shipping requirements may demand. Thus waste is avoided; crude oil remains in its natural underground reservoir until required for consumption; competition is preserved.

It is a common error supported somewhat by precedent that the owner of land owns everything located vertically beneath that land. There should be some limit and there is in customary practice. No one questions the right of a landowner to drill a well for water and pump therefrom as much water as he desires. The water may come from elsewhere than under his own land. Just as in the case of crude oil nobody knows where it came from or who owns it. Accordingly and justly, the first known possessor of it above ground is the acknowledged first lawful owner. We take water from streams without limit, although this water may have flowed over the property of others before arriving on our own property.

Likewise above the earth we have the air. There is a limit to an owner's rights above the land. He may erect a building thereon but laws may limit the height thereof. He cannot prevent anyone from looking across his open land or over top of his buildings and he cannot prevent the aviator from flying across. The landowner has not title to the air that blows onto and across his land. He can use as much as may be necessary to sustain the life of the animals on his property and enough to keep his fires and furnaces going. He is permitted to own only such part of it as he "captures" or consumes.

There are other limitations to the landowner's rights above the land. The Federal Government regulates the use of the air for aviation just as it regulates the navigable streams that flow over the land. No landowner would think to question the Federal Government's right to do this. Acccordingly, there are already in customary practices certain limits to a landowner's rights above and beneath his land. It is perfectly consistent with established lawful practice for the Federal Government to provide by law that the liquid, mobile, migratory crude oil reserves of this nation are in a state of indeterminable ownership and that he who first captures such crude oil above ground on his own land is the first known owner and therefore the legal owner.

In 1859 the courts of Pennsylvania so decided and wisely established the "law of capture" which was adopted by every court in every oil-producing State in the United States. That law was accepted by the industry until in recent years, when the major oil companies became the owners or controllers of the great majority of the oil land of our country. After that and after production caught up to and exceeded demand, production control was adovcated under the pretext of conservation. True conservation as above suggested is possible under the old "law of capture" and thereunder the public would enjoy the benefits of competition. Good old-fashioned competition is the best protection for the consuming public.

If, however, Congress decides to enact H. R. 7372 thereby continuing the evils of the Connally law and the Interstate Oil Compact, then it is the duty of Congress to amend H. R. 7372 or pass a concurrent act providing for limitation of private profit in the production of crude oil and uniformity of price to all purchasers of crude oil in the following manner:

(*a*) Impose upon every person and every business which produces, imports, sells, buys, refines, or possesses crude oil above ground, an excess profits tax equal to the amount by which such persons net profit exceeds 6 percent per annum of the fair value of his invested capital, with reasonable allowances for salaries and provision to encourage exploration and drilling of new wells, as was recommended in the testimony of Clarence Schock on April 29, 1937, at the House hearing on House bill 5366 and S. 790, Seventy-fifth Congress. (See p. 176 of the printed record of said hearing).

Mr. COLE. That was the Connally Act, was it not?

Mr. SCHOCK. The Connally Act; yes, sir.

(*b*) Authorize the President or an unprejudiced department of the Federal Government to fix the exact price at which every kind and grade of crude oil shall be sold, so that the price can be kept high enough to avoid destruction of stripper wells that are worth protecting.

Under the above recommended excess-profits tax the excess profits will go into the Federal Treasury for the benefit of the whole people. If the power of either State or Federal Government is to be used to control the volume of production of any commodity and thereby raise the price, then the people who constitute that government should protect themselves against extortion in price resulting in excessive profits to those who happen to be the owners of crude oil. It is manifestly unfair that the power of government should be used to enrich a group who happen to be the owners or possible owners of crude oil. Proration and Federal support thereof without price control and profit control are absolutely inconsistent with the public interest. Whenever the power of government is used to control price it should be for the universal benefit of all citizens of that government instead of for the few how happen to be producers of crude oil.

Under this plan, the President, or a department of the Federal Government, should be authorized to fix the exact uniform price at which every kind and grade of crude oil in each field shall be sold to all buyers, so that the price can be kept high enough to avoid economic destruction of smaller wells which are operated by pumping, the so-called stripper wells, which are necessary in the interest of conservation to supply the prevailing demand for crude oil. Such price fixing exists today but it is regulated by the major oil companies or their subsidiaries and is permitted under existing laws. Such price fixing, today, brings excessive profits to the owners of the oil wells through which the crude oil is forced by the underground gas pressure, the so-called flush-production wells.

Under the above proposed plan the price fixing would be done by the Federal Government, instead of by the major oil companies, and the important difference would be that the excess profits, created by the power of the Federal Government for the owners of flush production, would, by means of the excess-profits tax herein proposed, be transferred from the coffers of the major oil companies, where these excess profits go today, to the Treasury of the United States, thus giving back to the whole people values created by the power of the Federal Government, which Government should serve the whole people instead of the masters of the oil industry.

We pray you to give the consuming public a square deal and by the same method release us independent jobbers from economic slavery to the big oil companies. If you refuse to accept our plans for equitable control of production, then please withdraw all special privilege and let the crude oil industry return to open competition under the law of supply and demand and the law of capture. Under this old law of capture, the first known person to possess oil above and on his own ground was admitted to be the legal owner of it. No other owner could be proven. When a State undertakes to say that any oil produced in excess of proration laws is "stolen oil," it must be able to show where the oil came from and who owned it. If nobody owns it, nobody stole it. The only lawful first owner should be the person who first possesses it on and above his own ground.

The law of capture has been much maligned. It was established by the judges of the Pennsylvania courts in 1859 and was the only reasonable determination of ownership of crude oil and still is.

We have pointed out to you why the interstate oil compact and the State proration laws destroy competition and enrich a few private owners at the expense of the many and that H. R. 7372 unless amended will continue the same evil. We have pointed out to you how production to meet demand can be accomplished without proration and without destroying competition. We have pointed out to you how proration can be controlled so that the few shall not be enriched at the expense of the many and all buyers shall pay the same price for crude oil.

If some one of these equitable provisions or something similar is not incorporated in the Connally law or in H. R. 7372 if enacted or in concurrent legislation, then it is the duty of Congress to put an end to this conspiracy in restraint of trade and against the public interest by repealing the Connally law, and rescinding its approval of the interstate oil compact and defeating H. R. 7372.

You, gentlemen, members of the subcommittee conducting these hearings, have a great responsibility. We beg you not to be influenced by the number of appearances for or against this bill. There are thousands of independent jobbers and marketers all over the United States who are opposed to the special privileges granted to the large units of the oil industry by present Federal laws. They are not here to protest because they fear retaliation from their suppliers.

One special privilege begets another. Special privilege favoring one group will oppress some other group. The oppressed group will demand protection. If you try to be just by continuing to grant special privileges and protection, additional burdens will fall upon the public. The best solution is to deny all special privilege and repeal and defeat the laws under consideration.

If true conservation is needed or really desired it can be accomplished by Federal laws such as suggested heretofore in this statement.

There are millions of American citizens whose interests are involved in this legislation. There are many influential citizens who are stockholders of the major oil companies and who are selfishly willing to see special monopolistic privilege granted to the large units of the oil industry. Excepting these relatively few stockholders, every family and every citizen is adversely affected by the Connally law and the interstate oil compact and H. R. 7372 if enacted. The general public does not know what is going on. The news items and editorial columns of the daily press show abundant evidence of misleading propaganda favorable to the oil monopoly. It costs money to inform the public.

We independents are economically handicapped. The only possible protection for the consuming public, which includes our entire citizenry, lies with Congress, and it is the obligation of Congress to protect the whole people. Congress has in this case delegated that responsibility to the committee before whom we appear today. In 1937 and 1939 this same subject was under consideration by this same subcommittee with only two changes in personnel. Abundant evidence has been presented to you. We trust that never again shall it be possible for the public interest to be overlooked by a unanimous committee approval and a majority vote of Congress on such laws as the Connally law, the interstate oil compact or H. R. 7372.

I beg to offer a copy of a set of resolutions approved by the board of directors and the convention of the Independent Petroleum Jobbers Association of Pennsylvania at Harrisburg, Pa., on September 27, 1937. I ask that resolutions numbers 1, 5, 7, 8, 9, and 12 be made a part of the record of this hearing.

Mr. Cole. That may be filed, Mr. Schock.

Mr. Schock. Thank you; I offer for the record a copy of the record of the hearing held February 12 to 17, 1937, before a subcommittee of the Senate Finance Committee, first session, Seventy-fifth Congress, on S. 790. I ask that it be made a part of the record of this hearing or a supplement thereto.

Mr. Cole. I do not think we can do that, sir.

Mr. Schock. I would like to refer to it.

Mr. Cole. All right, you may refer to it.

Mr. Schock. You see, I thought that; it would make the volume pretty big.

Mr. Cole. It is already printed at the other end of the Capitol and available to anyone who wants to see it. So, we cannot make it a part of these hearings.

Mr. Schock. If you will permit me to make reference to it, it will be appreciated.

Mr. Cole. You may do that.

Mr. Schock. I offer for the record a copy of the record of the hearings before the Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, first session, Seventy-fifth Congress, on S. 790 and H. R. 5366 held April 27, 28, and 29, and May 3, 1937. I ask that it be made a part of the record of this hearing or a supplement thereto.

Mr. Cole. It may be by reference, but we cannot include that.

Mr. Schock. All right. I will be frank with you. I did not think you would want that volume in this report but you will grant me the privilege of the reference.

Mr. Cole. Yes, sir.

Mr. Shock. I have just one other page here that I want to read.

Mr. Cole. Very well.

Mr. Schock. In reading over Report No. 817, Seventy-fifth Congress, 1937, first session, which is Mr. Cole's report on the action of the House Committee on Interstate and Foreign Commerce on H. R. 5366 extending the life of the Connally law, I find these words:

> In other words the amendments suggested by them (the independent jobbers) were not germane to this legislation and were really violations of other law.

Assuming that this criticism that the amendments "were really a violation of other law" included amendments offered by me, I wondered as a layman what asininity I might have been guilty of. Accordingly, I consulted a very able lawyer and showed to him all the amendments which I suggested, the complete record of the hearings of H. R. 5366 in 1937 and the prepared statement which I have just read to you. The following briefly expresses his opinion:

> I have read your argument on H. R. 7372 and the similar statements which you placed on record in the hearings some 2 years ago. If the committee and the House are disposed to adopt the practical objects for which you are contending, they can construct a legal vehicle, that will stand the constitutional test, out of principles found in the regulatory powers of the States, the Federal antitrust laws, the Robinson-Patman Act and the fair trade and practice acts. The Constitution, you appreciate, is getting more elastic every year, so much so that if Congress has the will to do something, I apprehend it will be next to impossible for it to pass an unconstitutional act. I want to discuss the subject more fully at the first opportunity, because it is intensely interesting, novel and just as basically sound as any public regulation, without the evils of Government ownership.

That opinion was written on St. Valentine's Day and I pass it on to you hoping that it will sink deep in your hearts and minds and produce a more favorable reaction than my previous proposals, as a layman, have elicited.

(Resolutions approved by the board of directors and the convention of the Independent Petroleum Jobbers Association of Pennsylvania at Harrisburg on Monday, Sept. 27, 1937, are as follows:)

Resolutions Approved by the Board of Directors and the Convention of the Independent Petroleum Jobbers Association of Pennsylvania at Harrisburg on Monday, September 27, 1937

1. *Be it resolved*, That this association recommends legislation which will accomplish the ends hereinafter stated and urges all of our Representatives in Congress and all of our Senators in Congress and all of our members of the Pennsylvania General Assembly to initiate and/or support such legislation or resolutions as will aid in the accomplishment of the following purposes:

(*a*) Repeal of the Connally "hot oil" law which gives Federal assistance to control of production of crude oil with the result that competition is eliminated and the cost of crude oil increased.

(*b*) Repeal of the Cole resolution approving the interstate oil compact entered into by oil-producing States under the pretext of conservation with the result that the production of crude oil is controlled and competition eliminated, resulting in excess cost to the public.

(*c*) Withdrawal of assistance of United States Interior Department in control of production of crude oil and of appropriations for such purpose.

(*d*) Repeal of tariff of 2½ cents per gallon on gasoline and one-half cent per gallon on crude oil recently reenacted for a further period of 2 years in an amendment to the Revenue Act of 1932.

(*e*) Severance of pipe lines and tankers from control by oil companies and placing them under strict public utility regulation by Federal and State authority limiting their earnings to 4, 5, or 6 percent on a fair valuation of the investment.

(*f*) Reduction of State tax on gasoline at as early a date as possible.

(*g*) Repeal of the Federal tax on gasoline because we believe that taxing of gasoline should be a function of the States only.

(*h*) Defeat of any legislation which imposes or is intended to impose a State or Federal tax on fuel oil.

2. *Be it resolved*, That this association recommends a thorough investigation of the oil industry by Congress in order that the present monopolistic control may be checked and ended.

3. *Be it resolved*, That this association approves the action of the United States Department of Justice in its proceedings against the major oil companies at Madison, Wis., and expresses its appreciation of the action of the United States Department of Justice in actually bringing these offenders to trial.

4. *Be it resolved*, That this association approves the recent action of the United States Department of Justice against the Ethyl Corporation.

5. *Be it resolved*, That the officers of this association and the directors of this association are authorized to use every legitimate means for accomplishing the purposes expressed in all resolutions passed by this association.

6. *Be it resolved*, That we ask the Governor of Pennsylvania and the Pennsylvania General Assembly to join in a memorial to Congress asking for Federal legislation to accomplish the purposes herein recommended and approved.

7. *Be it resolved*, That we approve and commend the work of Paul E. Hadlick, secretary of the National Oil Marketers Association, who has consistently and persistently fought for the interests of the independent petroleum jobber and we recommend that all independent jobbers seriously consider joining this association.

8. *Be it resolved*, That we approve of the presentation of the interests of the independent petroleum jobber as expressed in the brief which our chairman, Clarence Schock, filed with the Senate committee at the hearing on Senate bill No. 790 on February 16, 1937, and at the hearing on House bill No. 5366 on April 29, 1937.

9. *Be it resolved*, That this association favors the enactment of legislation to divorce the producers, refiners, and transporters of petroleum products (pipe line and tanker) from the marketing branch of the oil industry as per the House bill 7800, introduced in the Seventy-fifth Congress by the Honorable Fred Bierman, of Iowa.

10. *Be it resolved*, That this association recommends an amendment to our Motor Vehicle Code providing for a change of date for registration of motor vehicles from January 1 to April 1.

11. Whereas the major oil companies of Pennsylvania are selling gasoline to consumers by tank-wagon deliveries to underground storage at lower prices than these same major oil companies are selling to dealers; and

Whereas it is believed that this practice is in violation of the Robinson-Patman Act: Be it

Resolved, That we request the United States Department of Justice and the Federal Trade Commission to make a proper investigation of the facts and take appropriate action.

12. Whereas certain oil-producing States have enacted State laws which control the production of crude oil, so that no more and no less crude oil is produced than is necessary to meet both foreign and domestic demand;

Whereas certain oil-producing States have entered into an interstate oil compact which assists in the control of production of crude oil and destroys competition between the States;

Whereas Congress has passed the Connally law, making it unlawful to move in interstate commerce any petroleum produced in violation of a State law;

Whereas Congress has passed a resolution approving the interstate oil compact which assists in the control of production of crude oil and destroys competition in production of crude oil between the States;

Whereas these laws have been advocated by the big integrated oil companies and other producers under the pretext of conservation but for the very evident ulterior purpose of stabilization of price of crude oil;

Whereas the Department of the Interior has aided the owners of crude-oil reserves in accomplishing this control of production of crude oil, permitting the doing of acts which heretofore were in violation of the antitrust laws;

Whereas Congress has aided this stabilization of price of crude oil by reenacting the tariff of 2½ cents per gallon on gasoline and one-half cent per gallon on crude oil and thereby proving the lack of a policy of true conservation;

Whereas all of these laws and acts have created and entrenched a greater and stronger monopoly in crude petroleum than ever existed heretofore, making it possible to sell all crude oil produced at whatever price the owners agree to exact: Be it

Resolved, That the Independent Petroleum Jobbers Association of Pennsylvania in convention assembled at Harrisburg, Pa., this 27th day of September 1937, hereby declares that it is the duty of Congress to enact additional laws, and/or repeal existing laws, thereby correcting the evils that are possible under existing laws and facts above set forth, and that we recommend to Congress enactment of laws which will provide one of the remedies hereinafter stated.

Remedy No. 1.—(*a*) Impose a tax on every person and every business which produces, imports, sells, buys, refines, or possesses crude oil above ground, an excess-profits tax equal to the amount by which such person's net profits exceed —— percent per annum of the fair value of his invested capital, with reasonable allowances for salaries and provision to encourage exploration and drilling of new wells, as was recommended in the testimony of Clarence Schock at the House hearing on H. R. 5366 and S. 790. (See p. 176 of the printed record of said hearing.)

(*b*) Authorize the President or an unprejudiced department of the Federal Government to fix the exact price at which every kind and grade of crude oil shall be sold, so that the price can be kept high enough to avoid destruction of stripper wells that are worth protecting with the result that excess profits will, under the above-recommended excess-profits tax, go into the Federal Treasury for the benefit of the whole people.

Remedy No. 2.—(*a*) Let the Federal Government, through the agency of a corporation created under State law or otherwise, take over all of the fields of flush production of petroleum as and when they exist or occur, paying the owners thereof a fair price.

(*b*) Let such a Federal agency operate these flush fields and sell crude oil to all buyers at the same price, fixing that price at a figure high enough to permit the competitive operation of stripper wells that are worth protecting.

(*c*) Let the large profit of such operation go into the Federal Treasury for the benefit of the whole people, thus avoiding the excessive enrichment of a relatively few private owners under existing production-control laws.

(*d*) Authorize or require such Federal agency to purchase and sell as much foreign crude petroleum, which is freely offered, as may be prudent, in order that the oil reserves of the United States may be conserved sufficiently to guarantee the public safety and defense.

(*e*) Prohibit the importation of petroleum and its products by others than such agency.

(*f*) Authorize such Federal agency to conduct exploration and development of public lands and to acquire by lease or purchase the right to develop private lands as may be necessary to provide for the public safety and defense.

Remedy No. 3.—In case Congress refuses to establish a policy of true conservation as recommended in remedies No. 1 and No. 2, then let it permit the crude oil business to return to a competitive basis by acting as follows:

(*a*) Repeal the Connally "hot oil" law;

(*b*) Rescind the resolution approving the interstate oil compact;

(*c*) Repeal the tariff of 2½ cents per gallon on gasoline, one-half cent per gallon on crude oil and other duties on petroleum products which were repeatedly smuggled through Congress as excise taxes in the Revenue Act;

(*d*) Withdraw the Interior Department from service to the oil monopoly;

(*e*) Enact Federal laws to protect the public against Proration laws of oil producing States.

13. *Be it resolved*, That the board of directors of this association petition the Department of Labor and Industry requesting that the maximum hours of labor in the marketing division of the petroleum industry be increased from 44 hours to 48 hours.

14. *Be it resolved*, That a copy of these resolutions be sent to the President of the United States, to the Governor of Pennsylvania, to our two United States Senators at Washington, to all Congressmen representing Pennsylvania at Washington, to all Senators and Representatives of the Pennsylvania General Assembly, to United States Department of Justice and the Federal Trade Commission.

Mr. Cole. We will take a recess until 10 o'clock, tomorrow morning.

(Thereupon, at 4:10 p. m., the subcommittee took a recess until 10 a. m., the following morning, Tuesday, February 27, 1940.)

PETROLEUM INVESTIGATION

TUESDAY, FEBRUARY 27, 1940

House of Representatives,
Subcommittee of the Committee on
Interstate and Foreign Commerce,
Washington, D. C.

The subcommittee met, pursuant to adjournment, in the committee room, New House Office Building, at 10 a. m., Hon. William P. Cole, Jr., presiding.

Mr. Cole. The committee will please be in order.

Congressman Disney is present, and we will be delighted to hear you, Mr. Disney.

STATEMENT OF HON. WESLEY E. DISNEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OKLAHOMA

Mr. Disney. Mr. Chairman and gentlemen, I have a rather hastily prepared statement here and I hope that the committee will give me pretty wide leeway in revising and extending this statement of mine, because I have had a very earnest 5 weeks involving another phase of the oil industry, and have put about all I have had in it.

Mr. Chairman, the philosophy of this bill seems to stem from the doctrine of conservation of crude petroleum, among other things, for the prevention of waste. Other theories are involved, but taking the bill by its four corners, it can be fairly said, from the instrument itself and from the showing made by the Department that proposes it, that the prevention of waste is the prime objective. Think of this philosophy coming from the Federal Government—waste: The Federal Frankenstein is the very essence of waste—but more about that later.

For the sake of argument, conceding the claim merely as an argument, is the waste of petroleum products growing or lessening? This subcommittee, 5 years ago, did not recommend legislation for the prevention of waste. Is there new proof that waste is accelerated in the oil business? Has the Department of the Interior made a showing that waste has been accelerated in the last 5 years? I am not sufficiently familiar with the record of the testimony of this hearing of the committee to state dogmatically that no such showing has been made, but I do know that witnesses have emphatically declared that no such showing has been made, but rather that the Department of the Interior filed its bill of complaint, and afterwards started looking for proof—and did not find much proof—at least rather incidental proof.

I think I am sufficiently familiar with the oil industry—although I do not claim to be an expert—to say that enlightened self interest, genuine competition, regard for fair and right thinking, and great mechanical, chemical, and technological improvements have lessened waste to a tremendous degree in the last five years. It is said that the packers get everything out of the pig but the squeal, and my observation in recent years is that we are getting more petroleum from the ground and more petroleum products from the crude than ever before. Why, then, this claim of waste? This claim of waste is an argument for the further centralization of Federal authority, whether consciously or not.

I shall conclude at the end of this statement, that I am against this legislation. Some member of the committee may properly ask why I am against this legislation when I was joint author of the Disney-Thomas bill in 1935.

Well, the Disney-Thomas bill did some good, because it fixed attention on the oil business in such a manner as he had not been before for some years. And, if you will pardon the personal reference, without being egotistical, I think I can say that it led to the formation of this committee which, with two exceptions, is of the same personnel as then. It led to the formation of this committee in 1935 which committee has done a tremendous amount of good work. The report that this committee made is still in great demand, even though it is out of print. I might say in passing that this committee has most justly earned the utmost respect of those who have observed its workings. If I happen to be inconsistent in supporting the Disney-Thomas bill, and not supporting this legislation, I plead guilty to the abstract charge. I am not trying to be consistent. There is such a thing as being consistently wrong. I am trying to be right this time.

Then, too, a man ought to grow wiser in 5 years as he grows older; wiser in observation and experience; yet in observing the improvement in the oil business—an infant business when you compare the industry of the whole Nation—and its methods, and in contemplating the tremendous trend toward centralization of the Federal Government, of which this legislation would be merely another bit of evidence.

Close observers of the trends of government in the last few years cannot have failed to know that there is a school of thought, followed in many instances by those in powerful positions, which believes that the States have lost their usefulness for service to the people, which believes in a strong centralized form of Federal Government, with the States decadent and in the substitution of economic zones for the States. This is an actual statement of fact that is going on here. That statement was made before the Ways and Means Committee in discussion of tax-exempt securities and was undenied.

This school believes in a total obsolescence of the Federal system of States, with a central head at Washington, from which all human activities may be directed. It is forthright in this belief, and its expressions are also. It believes that the complexities of our modern civilization render the States substantially useless for the welfare of the people. This school, either wilfully or in good faith, believes that democracy can be sacrificed to expediency—and that is going on every day—under the guise and claim of the general welfare.

Now, I know if democracy is worth while, this must be evil masquerading under the guise of good. If the American system, the American way, as we have been taught to believe in it, is the correct one, then this school of thought is wholly in error, when it would sacrifice permanent principles of government, based on democratic rights of the individual, to the current benefit of a group system.

This is not a drift toward collectivism. This is a radical step, with our eyes open, in that direction.

We paid dearly for this centralization, at a terrible cost. In 1916, we spent $1,034,000,000 for the Federal Government. In 1927, the total grew to $2,700,000,000.

In 1938 the Federal Government spent $7,691,000,000. The State governments followed suit in 1938 and spent $4,358,000,000, and the local governments spent $6,150,000,000—a grand total of $18,300,000,000 for government in the United States in 1938, in which year we had a total national income of $64,000,000,000. In other words, 28¼ percent for taxes.

Is it any wonder that since centralization and bureaucracy runs riot, that we have a million people, approximately, on the Federal pay roll?

It is not a partisan issue. Both parties are equally guilty.

This is no tirade against either party or against any system, except the system of extending centralization. If it sounds like an impassioned tirade, you will have to forgive me for my earnestness.

But, these billions are a bagatelle, a straw in the wind, as compared with the loss to democratic government that has covered us like a shroud.

The National Labor Relations Board is acting as judge, jury, prosecutor, witness, and executioner, without trial, in a land that boasted of the Boston Tea Party as an historic landmark.

The House of Representatives last month passed an antilynching bill, another nail in the coffin of local self-government. The Department of Justice is bold in strategic venues in its prosecution.

The Census Bureau, originally set up to number the people, now delves into every private secret and social notion of the individual, with fine and imprisonment as a penalty for refusal—all in the guise of social reform.

The Securities and Exchange Commission is actually talking about becoming a receiver for a corporation in a Federal court. Andrew Johnson bore the cross of impeachment for contending that the States had the right to fix the suffrage status of its citizens, and now two cases are on the way to the Supreme Court of the United States, with zealots hell-bent on having a judicial decision to the effect that the States do not have the right to fix a poll-tax qualification for suffrage.

The Federal Bureau of Investigation, with a tremendous organization, is investigating all manner of local crime conditions, relieving the local authorities of the responsibility, and, in effect, depriving them of their jurisdiction. The United States district attorneys are, with impunity, investigating State and local primary elections all over the land, where not a vestige of Federal propriety is involved.

We are hearing proposals for Federal life insurance. That Wagner political medicine would cost a billion to the States and a billion to the Federal Government after 8 years, and make every doctor a Government clerk.

Here are some more financial figures. This statement will be brief. In 1928 the Congress expended $900,000 in the use of the franking privilege. The executive departments spent $6,000,000. In 1938, the Congress spent $700,000 and the departments, $35,000,000. I have in my possession a pamphlet of 13 mimeographed pages, listing the various departmental units which engage in publicity, under the guise of disseminating information to the people.

Bureaus, boards, and commissions have been inveigled against by our statesmen during the last half century. It is conceded that many of them have conflicting jurisdictions and overlapping functions. No one who currently views the situation will for a moment claim that the rights of the individual are not being gradually circumscribed, to the destruction of his individual rights, and in violation of the rules of the game of democracy as we believe in it in America.

I took this occasion to see what the books use for synonyms for "waste", and I could not but think, when I read these significant words, how they apply to the recklessness with which we have turned from local self-government to centralized bureaucracy: Prodigality, dimunition, loss, dissipation, destruction, devastation, havoc, desolation, ravage.

To me these words are past as well as prophetic. A strong centralized government of brigandage, with 1 percent of the people in power and one man driving the juggernaut, is making war upon a little, defenseless democracy, and loss, dissipation, destruction, devastation, havoc, desolation, and ravage, those synonyms of waste, feebly describe the conflict, a conflict not desired by the people of the Russian monster, who are serfs and slaves to a Frankenstein of centralized bureaucracy.

I am not going to attempt, Mr. Chairman and gentlemen of the committee, to discuss the merits or the demerits of this specific legislation, except to suggest that it is my considered, profound belief that it would be another step in the direction to which we are headed —in my judgment to the detriment of the life of the Republic for the long pull.

I think the time has come to stop, look, and listen. I would not presume to advise the wise gentlemen who compose this committee, except to say that unless the proof shows that there is a clear, positive, unimpeachable overwhelming necessity for this legislation, a necessity based upon our actual, immediate national peril, that it would be unwise to consider this resolution favorably except as the very last resort of absolute necessity, for it would inevitably lead in the direction which I have indicated. It certainly plays into the hands of those who believe that the States are and ought to be obsolescent, and that the good of the people demands that all power be centralized in Washington, to the detriment and final extinction of local self-government.

With this theory, this philosophy, born, as I believe it is, of the disorganized workings of many confused minds of European dissension, I do not agree.

As I said, I am not remotely attempting to be consistent. I hope I have grown wiser as I hope that this small contribution pointing out some of the definite evidence of this trend may be useful to the committee.

Mr. COLE. Mr. Disney, you state following the introduction of the Thomas-Disney bill in 1934, and the creation of this committee, no legislation was recommended by the committee. I presume you overlook H. R. 9053.

Mr. DISNEY. No; I did not mean to exclude that, Mr. Chairman. I know about that, Mr. Chairman, because I introduced a companion bill.

Mr. COLE. Which was introduced in August 1935.

Mr. DISNEY. I was aware of that.

Mr. COLE. That bill, as you remember, was the unanimous recommendation of this committee.

Mr. DISNEY. I think I ought to say that what I meant to suggest was that no legislation comparable to the Disney-Thomas bill or this legislation was introduced. That is what I intended to say and intended to put in my statement. H. R. 9053 and H. R. 9055, of which I was author, which were bills introduced at that time.

Mr. COLE. That is true. I remember that.

Mr. DISNEY. Yes, sir.

Thank you very much, Mr. Chairman.

Mr. COLE. Thank you, Mr. Disney.

We will hear Mr. Hadlick.

STATEMENT OF PAUL E. HADLICK, SECRETARY AND COUNSEL, NATIONAL OIL MARKETERS' ASSOCIATION, WASHINGTON, D. C.

Mr. HADLICK. Mr. Chairman and gentlemen of the committee, my name is Paul E. Hadlick. I am secretary and counsel of the National Oil Marketers' Association. I have been engaged in the oil trade association work since 1924.

I appear before you to present such information as I am able on the petroleum industry. The members of the National Oil Marketers' Association are independent distributors of petroleum products. It may seem at first glance that they would have no interest in legislation such as proposed by H. R. 7372 pertaining to the production of crude oil. While I will develop the subject in greater detail later on in my statement I want, at this time, to point out the characteristics of the oil industry that distinguishes it from other industries and which tie the independent oil distributor into the whole oil problem.

The independent oil marketer is faced with the direct local competition of the major oil companies for the consumer trade. Fortified by profits from production, refining, and transportation (both pipe line and tank ship) the major oil companies use these profits to subsidize their marketing operations so that the investments of many independent oil marketers have been jeoparized and rendered profitless. The independent oil marketer has no oil wells, no pipe lines, no tank ships and no refineries to subsidize his marketing losses.

For the most part those who have appeared before you from the oil industry and from the oil producing States do not disagree with the principle of regulation suggested in H. R. 7372, but differ only as to whether a Federal or a State agency should perform the task. In that respect the National Oil Marketers' Association is in an entirely different position in appearing on this legislation. We believe that aside from State statutes designed to prevent physical waste only there should be no regulation by either the State or the Federal Government. We further feel that proration and market demand legislation have nothing to do with true conservation of petroleum. We contend that keeping supply at or below market demand is simply an aid to monopoly.

Over our objection the Federal Government has already helped the States to control the supply of oil. If the testimony of the State officials to whom I listened proves anything it proves that this committee should take prompt action in recommending to Congress (1) the repeal of the Connally Act (extended by Pub. No. 158, 76th Cong. 1st sess.), as proposed by Congressman John M. Coffee in H. R. 2308; (2) the withdrawal of Congressional approval of the Interstate Oil compact (authorized by Pub. Res. No. 31, 76th Cong. 1st sess.); and (3) the enactment of legislation to prohibit the Bureau of Mines of the Department of the Interior from issuing the monthly forecasts of demand for motor fuel and crude oil. I would like to discuss those briefly.

The operation of the Federal Tender Board to administer the Connally Act in East Texas, and the necessary supervision from Washington cost the Federal Government $257,758 for the last fiscal year. Admissions of State officials indicate that their quotas are usually made up from the forecasts of the Bureau of Mines. The Connally Act forbids the shipment in interstate commerce of any oil produced in excess of such State quota. It would seem to me that your committee would do well to conduct a thorough investigation into the operations of the Connally Act, with special reference to the so-called hot oil scandals that the newspapers report from the State of Louisiana. I believe an impartial and thorough investigation would prove the fallacy of such legislation in a game in which the stakes are so high. Economic prohibitions, like moral prohibitions, bring about the rule of the racketeer.

I make the statement above that it was occasionally or usually made up from the forecasts of the Bureau of Mines, and that is true. Since preparing this statement, however, I have noted that as of last Saturday, February 25, 1940, the State of Texas, in their March order have authorized the production of 11 percent over the quota fixed by the Bureau of Mines. I point that out, merely so you will not think I am trying to gloss over this subject. The report in the newspaper makes this significant statement:

> This will be the first month in a long period in which any important southwestern oil-producing State has an allowable production substantially in excess of the Bureau of Mines estimate.

As your committee knows, the Interstate Oil Compact was approved with a very important section known as article 5, reading:

> It is not the purpose of this compact to authorize the States joining herein to limit the production of oil or gas for the purpose of stabilizing or fixing the price thereof or create or perpetuate monopoly or promote regimentation, but it is limited to the purpose of conserving oil and gas and preventing the avoidable waste thereof within reasonable limitations.

I believe that a logical inquiry of your committee should be whether this section was inserted as bait to secure its adoption, or as a bona fide protection to the public.

Should you be interested in how this compact actually works I respectfully refer you to pages 6975 to 6976 and 6980 to 6983 of the trial court record in the anitrust conspiracy trial at Madison, Wis., in the case of *U. S.* v. *Standard Oil Company* (*Indiana*). Therein Mr. Wirt Franklin, former president of the Independent Petroleum Association of America, said under oath:

> Well, regardless of that provision in the contract, I have heard discussed at interstate compact meetings the amount of oil necessary to be produced to

stabilize the industry and to balance production with demand; and some of the members of the committee have even insisted on discussing what is a proper price for crude oil.

And then in August 1939, when a drop in the price of crude oil had been made by some companies, and threatened by others, the Interstate Oil Compact Commission met in Oklahoma City, Okla., and despite the above quoted article 5 of their charter they agreed to close all oil wells in the southwestern producing States. That one action justifies Congress in repealing the authority for the Interstate Oil Compact. The story of the meeting which thus conspired to stop production of oil and prevent the free flow of commerce as told by National Petroleum News, in part, is as follows (NPN, Aug. 23, 1939, p. 13):

> Tulsa, August 19—State officials charged with enforcing prorating in six oil producing States, harassed by a sudden break in crude prices, ducked under the hastily spread and protective wing of the Interstate Oil Compact Commission at Oklahoma City August 15 to figure what to do in the crisis.
>
> Two hours later they emerged from the first emergency meeting in the compact commission's history—an executive session from which everyone was barred except State and compact officials and their attachés and the "official observers"—armed with a plan destined to write a new page in the history of American industry.
>
> That plan is now known around the world. Briefly, it called for the oil regulatory bodies to shut down crude production in their respective States. Within 56 hours the plan had been followed in the six southwestern producing States of Texas, Oklahoma, Kansas, New Mexico, Arkansas, and Louisiana.
>
> More than two-thirds of the Nation's current crude oil production had been stopped.

As I understood the testimony of Mr. A. Andreas, a member of the Interstate Oil Compact Commission from New Mexico, he admitted that the purpose of the August shut down of crude oil production was to prevent a drop in price. If I understood the admissions correctly this committee should send a copy of the transcript of his testimony to the Attorney General of the United States for an investigation to determine if, despite the authorization of the compact, these State officials have not been guilty of conspiracy to violate the Federal antitrust laws.

I have noted the questions asked by Mr. Wolverton, and I would like to interpolate here and read just a short statement from the sworn statement of Colonel Thompson before the temporary National Economic Committee.

The following cross-examination by Mr. Hugh B. Cox of the Department of Justice appears on page 474 of the official transcript:

> Mr. Cox. Will you look at this clipping from the Fort Worth Star for August 14, which I point out to you, and tell the committee whether that is an accurate copy of a telegram which you sent?
>
> Mr. Thompson. Yes; I think so. Will you read it?
>
> Mr. Cox. Yes; I am going to. This telegram reads as follows and was addressed, as I understand it, to Gov. Henry Horner, of Illinois, and Gov. Earl K. Long, of Louisiana. It reads:
>
> "On account of the drastic cut in the price of oil which seems to be unwarranted as stocks of all oils are at a 12-year low and demand is at an all-time peak, we have called a special meeting of the Oil States Compact for 2 p. m. Tuesday at Oklahoma City in Governor Phillips' office. We hope you will come or send representatives to this important meeting to discuss the situation."
>
> May we accept that statement in the telegram as an accurate statement of the reason the meeting of the Oil Compact was called?
>
> Mr. Thompson. Yes; I see no reason why you can't.

Mr. COLE. I think that same telegram was referred to in the Colonel's testimony in New Orleans, which has not as yet been printed.

Mr. HADLICK. I had not known of that, Mr. Chairman.

Mr. COLE. My recollection is that the committee asked him something about it. I am not sure about it.

Mr. HADLICK. Now as to the forecasts of demand prepared by the Bureau of Mines. As I am informed there has never been any legislative authority for this activity. The work has been performed out of funds appropriated by Congress for the Petroleum Economics Division, a division which cost the taxpayers $61,162 during the last fiscal year. Just what part of this $61,162 was used for the preparation of these forecasts I do not know.

These forecasts were the outgrowth of the activity of the Department of the Interior in administering the National Recovery Administration Code for the Oil Industry. As you know, the Secretary of the Interior was the Administrator of the Petroleum Code.

The issuance of these forecasts is an attempt to carry on and carry out some of the benefits of the National Industrial Recovery Act, the benefits accruing to two certain groups in the oil industry, the producers and refiners. The theory of the National Recovery Act was aid for an entire industry and not just parts thereof. The issuance of these forecasts definitely penalizes the great multitude of independent oil marketers and aids in the transfer of what rightfully belongs to them to another group or groups in the industry.

The activity of the Department of the Interior in issuing these monthly forecasts provides a means for the oil industry to circumvent the antitrust laws. Were this activity of forecasting undertaken by the oil industry itself they would be in violation of the antitrust laws under the Supreme Court decision in the so-called Hardwood Lumber decision (*American Column & Lumber Company et al.* v. *United States*, 257 U. S. 377). In that case the Supreme Court summed up the Sherman Antitrust Act and the decisions thereunder, saying:

> It has been repeatedly held by this Court that the purpose of the statute is to maintain free competition in interstate commerce and that any concerted action by any combination of men or corporations to cause, or which in fact does cause, direct or undue restraint of competition in such commerce falls within the condemnation of the act and is unlawful.

The Supreme Court in this same case, after reviewing and quoting from the evidence, said:

> This is sufficient to convincingly show that one of the prime purposes of the meetings, held in every part of the lumber district, and of the various reports, was to induce members to cooperate in restricting production thereby keeping the supply low and the prices high, and that whenever there was any suggestion of running the mills to an extent which would bring up the supply to a point which might effect prices, the advice against operations which might lead to such result was put in the strongest possible terms. The cooperation is palpable and avowed, its purpose is clear, and we shallsee that it was completely realized.

Finally in conclusion the Supreme Court stated:

> Convinced, as we are that the purpose and effect of the activities of the "Open Competition Plan," here under discussion, were to restrict competition and thereby restrain commerce in the manufacture and sale of hardwood lumber by concerted action in curtailing production and in increasing prices, we agree with the District Court that it constituted a combination and conspiracy in restraint of Interstate Commerce within the meaning of the Antitrust Act of 1890.

Now if a plan of forecasting market demand in order to keep the proper balance between supply and demand—and that means a higher price—would be illegal for an industry to undertake under our antitrust laws, does it not seem logical that the Congress should step in and cease appropriating funds for such activity, and definitely set forth its mandatory instructions to the offending department.

The issuance of these forecasts aid the major oil companies to hold their grip on the production and refining of oil without any protection for either the independent oil jobbers or the consumer. And this grip on "supply and demand" means a grip on price. Mr. Pettengill, a former member of your committee while he was in Congress, said (Hot Oil, p. 34):

> When we at Washington attempt to balance supply and "consumer demand" we are, in fact whether we call it so or not, fixing prices by law.

Mr. William J. Armstrong, oil and gas conservation officer of the Corporation Commission of Oklahoma, speaking of the bill before you on February 9, said:

> If the Congress should find that this type of legislation is necessary in the interest of conservation, then it would be essential that some provisions be made to compensate the unfortunate lease and royalty owner whose property, under these rules, could be confiscated.

And we might ask, not as to future legislation, but as to the Connally Act, the Interstate Oil Compact and the activity of the Interior Department in putting out the forecasts of demand, is Congress going to make provision to compensate the independent oil marketers who have lost heavily because of the operations thereof?

An indirect result of the shutdown of the oil fields in the southwest last August was a rise in the prices for fuel oil along the Atlantic Coast this winter. This rise was further aggravated by an increase in the tanker rates from the Gulf to New York of below 17 cents per barrel in August to above 70 cents per barrel recently. By simply transferring 16 of its tankers (126,000 gross tons) from United States to Panamanian and Venezuelan registry the Standard Oil Co. (New Jersey) created an arbitrary shortage. Bunker fuel for our ships jumped from around a dollar a barrel in August to $1.50 per barrel at present.

I want to call your attention to the case of the Standard Oil Co. of Nebraska, which was bought out last August by the Standard Oil Co. of Indiana. It was a strictly marketing company having no production, no refinery, and no pipelines. No doubt the reason was as shown in their statement that for a 9-year period they showed consistent losses, with the exception of the year 1936, when they made $10,000. And, that is the condition that confronts the independent oil marketers.

I would like to go into the petroleum marketing problem in some detail, as I believe you should have these facts when you consider such an important piece of legislation as H. R. 7372.

The people I represent are engaged in marketing, wholesale and to a certain extent retail. They depend for their existence upon making a profit out of these operations alone. Through control features in the production and refining of oil, some legalized by the aforementioned acts of Congress, others illegal, as was disclosed in the Madison oil trials, these major oil companies are enabled to absorb losses in marketing and yet show an over-all profit on their operations.

By doing so they crush out the very existence of the independent marketers.

The independent oil jobber performs the function of distribution of petroleum products in the local community. A bulk plant, warehouse and trucks are essential to do a wholesaling or jobbing business. Gasoline, kerosene, fuel oils, and lubricating oils are received in tank car lots. Other products handled include tractor fuels, greases, and in many cases tires and automotive accessories. A few jobbers receive their petroleum products by harbor or river barge and a very few along the east coast from ocean-going tankers. The jobber usually distributes these products to at least one of his own stations and to the stations of dealers he is fortunate enough to have as customers under his own, a group or a refiner's brand. In addition, in rural communities where there is a farm trade, the jobber's trucks will be found delivering petroleum products into the farmer's storage tanks or drums. In the cities, fuel oil is delivered by tank truck to homes and office buildings. There is no question but what this distribution function can be performed more economically by the independent oil jobbers than by the integrated units.

The independent oil jobber has certain natural advantages that enable him to operate more economically than the major oil companies can conduct their bulk plant operations. Being a local man his business is a local institution that carries weight in the community. He has the advantage of direct supervision over his investment and his operations. This is an important item because while employees in large numbers under one roof can be adequately supervised, it is not so in the case of a few employees scattered throughout the various communities distant from main offices.

Hence the independent jobber does not have the executive and supervisory overhead to absorb in marketing as do the major oil companies. Neither is he burdened with the overhead of auditing and other expenses necessary to major oil company control of its marketing outlets.

The matter of a margin is a relative thing. While the jobber can operate cheaper than the majors, he cannot go on endlessly operating on half what the major oil companies are willing to spend in their marketing operation. We do not claim that every unit in an industry is entitled to a profit. But we do contend that it is unfair for the major oil companies to spend in marketing petroleum far and beyond their income from that branch of the business, making up such marketing losses from their profitable operations in other branches of the industry.

The integrated companies through their control of a portion of the petroleum products from the well to the consumer have been able to obtain a price that will net them a certain overall profit. In this way they can whip the independent producer, the independent refiner or the independent jobber according to their own designs. But with production control it is the independent refiner and marketer that have taken the whipping since 1934.

There are approximately 8,000 bona fide independent oil jobbers east of the Rocky Mountains and they handle 50 percent of the distribution of all petroleum products in that area. Their investments range from $5,000 to $500,000. There are probably several thousand wholesale operators in the oil business classified by the major oil companies as jobbers but controlled by their supplying companies and many of them in metropolitan areas are simply large retailers under the control of their supplier.

The oil jobber is not to be confused with the jobbers of other merchandise. The oil jobber is a wholesaler who takes title to the goods he handles; he maintains a place of business which consists of at least three large storage tanks for gasoline, as high as six tanks for fuel oil, many tank trucks, and a warehouse large enough to store motor oils and greases, lubricants, naphthas, tires, tubes, and automotive accessories. During the last several years the oil jobber has rapidly become a distributor of automotive accessories in an effort to recoup the losses sustained in his oil business.

The major integrated oil companies have operated their marketing outlets at a loss for a number of years. This may be hard to understand but it is no doubt their desire to control the entire integrated function from the drilling of the well to the sale of the finished product to the consumer. Once the independent jobber is eliminated you can well imagine that absorption of marketing losses by major oil companies will cease.

The situation today is not unlike that which existed during the period of the code under the National Industrial Recovery Act. Just a month prior to the Supreme Court decision invalidating that act the so-called Blazer Committee report (Petroleum Code Survey Committee on Small Enterprise, March 28, 1935, P. A. B. No. 97,815) was filed. The following appears therein:

> Dealers complain, however, that large oil companies are not closing up these stations of their own which they are unable to operate profitably on the margins given to dealers. We consider this a valid and important complaint. Doubtless, enforcement of rule 6 of article V (pertaining to use of profits in one branch of the industry to subsidize losses in another) which we deal with elsewhere, would tend to correct the situation.
>
> Typical of these complaints is a letter written by a consulting engineer who had given financial backing to a relative in the retail gasoline business. After commenting on a recent reduction in the margins of dealers, he writes: "Two new Super-Service Stations are being erected within a stone's throw of my relative's station by companies whose gas he sells, and another chain Super-Service Station is going up nearby. In the community where I live, north of New York, four such stations have been erected within a few months and the small men are being wrecked. These company stations have so many attendants and such a high investment cost that it is obvious they could not fail to lose money if they were charged on the books for oil and gas at the same price they charge to independent marketers."
>
> Another marketer commenting on the situation writes:
>
> "The principal reason for the multiplicity of service stations is that every integrated company feels it must have a service station in every neighborhood of every city of every State. The local representative of the ——— Oil Co. told me he would never be satisfied until his company had service stations in every neighborhood in our city giving them a total of 15 or 20 stations. Other integrated companies appear to have the same idea and soon we will have each of them represented by a service station in every neighborhood—if there are enough corners for all of them."
>
> A number of those who sent in complaints call attention to the figures submitted in connection with the arbitration of the service-station strike in Cleveland last summer, as published in the National Petroleum News. The exhibits presented by 10 large oil companies showed that average costs for marketing through their own service stations had averaged 9.63 cents per gallon of gasoline sold during 1933. If, from these figures, is deducted the entire gross profit made on nongasoline products (equal to 1.7 cents per gallon of gasoline sold) the net cost of selling the gasoline itself would appear to have been approximately 7.93 cents per gallon. This cost, which includes a proper share of bulk plant and overhead expense, compares with an average combined margin at that time to jobbers and

dealers of less than 6 cents per gallon. We believe that those costs are reasonably typical of major company marketing expense. Obviously such uneconomical operations can exist only by virtue of subsidies from other branches of the industry.

In the October 1937 issue of Fortune magazine appears what is supposed to be a highly complimentary article on Gulf Oil, with photographs, maps, and charts to picture the growth of this company. From the standpoint of the independent jobber and refiner, the activities of such a large integrated organization as Gulf are anything but consoling. The article quotes Edgar C. Rothwell, vice president of Gulf, as saying: "Refineries, you use them to get rid of your crude." Further on, the article says:

> In 1933 Gulf's 7,800 miles of pipe charged Gulf's refineries $16,000,000 for delivering to them 50,000,000 barrels of crude. Of this, $6,000,000, a fancy 37 percent, was profit. * * *
>
> And no wonder, between pipe lines and crude, that Gulf did not much care whether its 8 refineries and its 2,300 filling stations made any money or not. The "locked profits" in crude sufficed to explain Gulf's extraordinary prosperity to almost everyone's satisfaction.

The integrated companies' philosophy for absorbing marketing losses is perhaps best summed up by one of their own economists, Mr. E. DeGolyer. In a prospectus of the Texas Corporation, dated February 5, 1937, page 77, Mr. DeGolyer says:

> While both domestic and foreign marketing operations, considered as departments, have shown losses in each of the years 1930 to 1935, the marketing operations of the corporation's subsidiaries are, in my opinion, as good as or better than average good practice in the industry. Costs of marketing are low, and the marketing departments, both domestic and foreign, have performed well their primary function of providing assured outlet for the products of the corporation's subsidiaries and thus permitting them to operate broadly in the other branches of the oil industry.

Dissipation of profits made in other branches to "squeeze" the independent oil jobber also detracts from the rightful revenue of the Government. If the marketing operation were divorced or not operated at a loss, the integrated unit would show an even greater profit than at present, and upon this would pay a higher tax return.

In the prospectus of the Pure Oil Co., dated August 30, 1937, on file with the S. E. C., there appears (p. 10) the following statement:

> Under conditions existing in recent years, marketing operations, considered as a separate and distinct activity without regard to earnings from collateral operations and based upon the acquisition of refined products by the marketing divisions and subsidiaries at no allowance from published wholesale market prices, show substantial losses with the result that the company's consolidated net earnings have been substantially less than they would have been had it been possible for the company to sell its crude-oil production as such at posted prices or as refined products at full published wholesale market price.

In the above instance, if the Pure Oil Co. had not lost money in marketing they would have had a larger net income upon which to pay taxes and also to pay dividends. Larger dividends would have meant larger income-tax payments from the individual stockholders.

Then, too, if oil marketing were left to stand on its own, the independent concerns would quite likely have net profits upon which to pay taxes and dividends.

I wish to all your attention to a chart appearing on page 26 of the December 1937 issue of World Petroleum, which chart was published in connection with an article by Paul Ryan on "Can Marketing Produce More Profits." The figures which Mr. Ryan used as the basis for his chart are shown in connection with the article. This chart as you can see shows at first a white space indicating the investment of the whole industry; the next small white space represents the investment in the pipe-line division and the large black the portion of profits therefrom. And next a white space showing investment in production and the large profits therefrom. The final white space above the line will be found by itself. This represents the oil-industry investment in both refining and marketing. Despite the fact that refining has at times been profitable you will note an over-all tremendous loss in refining and marketing, as shown by the projection of the lines below the zero level. This chart shows what we are up against—the using of profits from other branches of the oil industry to embarrass the independent oil marketer.

You can readily appreciate that had these companies not taken such tremendous losses in marketing that the income-tax returns to the Government from the major oil companies would have been much larger.

Historically, the independent oil-jobbing business started in earnest shortly after the decree of 1911 dissolving the Standard Oil Trust into 33 separate companies. This came about by the fact that the new capital dared invest in independent refining units and new jobbers came into existence to handle the distribution of such independent refiners.

Independent competition was further aided by the discoveries of new fields of oil in Oklahoma and the rest of the midcontinent. Independent refiners and jobbers expanded their businesses, each because of the existence and expansion of the other, until the post-war period when, according to the geologists, a shortage of crude became imminent. In the early twenties many independent jobbers were squeezed out of business. A high price at the refinery with a low tank wagon price performed the operation. The jobber was forced to buy at a refinery price dominated by the major oil companies and to sell at a tank wagon price fixed and posted by the Standard Oil Co. which controlled the prices in his area.

The picture again changed. The interdependent growth of independent jobbers and independent refiners took a new lease on life beginning in 1923 with the coming of the oil fields of California and a year or so later with Smackover and other big fields in the midcontinent. The post-war actual shortage of crude oil (which almost eliminated the independent oil jobber from the picture) has been continued to date by artificial means through the use of what has become known as proration.

I will briefly trace the plight of the independent oil jobber from the time of the World War to date. The price of crude reached a peak of $3.50 a barrel in 1920. Gasoline sold as high as 31.9 cents per gallon in the same year. The jobbers of the country at that time had hard sledding and many of them went broke or sold out to the majors for nominal prices. Why? This was just prior to the bringing in of the big flush production in California. Up to that time the oil pools that had been discovered were under control of the majors; no new pools were immediately in sight; and the major oil companies extracted their pound of flesh from the public. One hundred percent dividends were the common thing on the part of the Standard companies. The late Senator La Follette was trying to do something in Congress.

This post-war period 1920 to 1923, is an important one to study because it was a period in which the major oil companies had stifled competition by complete control through pipe lines, the buying up of production and the building of refineries. The independent oil jobber was on the way out and the public were paying for their lack of vigilance in enforcing laws made for their protection. Then California fields came in with flush production and some of this product began to reach the east coast and the Middle West. Independent refiners could again operate and get crude supplies and as competition was restored prices of crude oil and the prices on refined products fell.

For the next 10 years the independent oil jobbers enjoyed a reasonable amount of prosperity. New fields in California, Oklahoma, Texas, Louisiana, and New Mexico brought competition back into the oil business for the moment. While the independent refiner and jobber again expanded the public benefited by the competition resulting from their activities.

During all this period the major oil companies were working on plans to control the marketing of petroleum once they got control of crude-oil production. The main thing was to get the independent jobbers under yearly contracts and to use major brand names in their business. After that, with the control over crude oil, and a little pool buying from the independent refiners the jobber was at their mercy and the squeeze was on.

The circumstances leading up to the transfer of the jobbers from open market buying to contract buying should be recounted. From 1923 on it was the custom for most independent jobbers to sell products under their own brand names. They bought gasoline on an open market on specification. These jobbers were the first to develop dealer business in a modern way.

A policy has always existed among the major oil companies of chastising any market where independent competition became important. In the early days the Standard did not post a retail price. It posted a tank wagon price at which the dealer purchased. By ruse or otherwise the Standard would get a ticket showing a lower price by some company in a territory where it had a bulk plant and it would immediately lower the tank-wagon price. With bulk plants everywhere the control of the selling price of jobbers was an easy matter for Standard.

It may be pointed out here that the Standard companies have always posted a tank wagon price at which they are willing to sell dealers. For many years they also posted a service station price. With complete bulk plant coverage and a control of from 20 to 50 percent of the volume no one could sell at a price higher than the price fixed by Standard. If they sold lower the usual Standard policy was to meet such lower price. When the spread between tank car and tank wagon became unreasonably high the jobber reduced prices. When this spread disappeared or diminished, the jobber, in the nutcracker, has had to absorb the loss or go out of business.

Being hard pressed in a local area the independent jobber would probably ask his independent refiner for a "guaranteed margin" on the local market. That is, protection of a certain amount so that he could stay in business. Failing to get this from an independent refiner the major oil company salesman was on hand offering such a contract. Thus was an independent jobber switched over from an independent refining source of supply.

The huge advertising programs of the major oil companies for their products, involving newspaper, magazine, radio and billboard, enticed another group of independent jobbers to leave their independent refining sources of supply and go over to a major oil company brand and source.

Again the major oil companies would come in and offer huge loans to independent jobbers to get them to switch over to their brands. In that period, as today, the raising of capital in small amounts was an expensive procedure. Usually these loans were not made with the idea of merely selling the jobber; like a great many farm mortgages, the place was sold when the mortgage was signed, although the mortgager did not realize it until later.

Then came the use of "lease and license" and "lease and agency" by the Standard and the other major companies. By these methods the major companies leased a filling station at a gallonage or flat rental from a dealer. This was a regular real-estate lease which they usually recorded. In turn the company then granted the dealer a license or agency to operate that same station and guaranteed him a definite margin. This embarrassed the independent jobber who had no guaranteed margin. It likewise penalized the independent refiners and lubricating-oil compounders who were thus automatically frozen out of many stations taken under lease.

The jobber who, up to this time, had not gone over to a major or refiner's brand, was faced with gambling on not only the fixation and lowering of his jobber margin by the Standard, but placing himself in the position of guaranteeing to his dealer outlets a definite set margin which might have to come out of his pocket were a price war to take place in his territory.

All this sent the jobbers scurrying to their sources of supply for guaranteed margins. Even independent refiners, seeing their business going from under them resorted to the practices of guaranteeing margins. Eventually most of the jobbers were thus signed up on contracts bearing a strange familiarity one to another, contracts which guaranteed them a definite margin in their locality under the posted retail price of the Standard. The use of local price wars hastened many jobbers to make up their minds. The margin in the early contracts was fair enough, but with a sliding scale provision based on the prices for gasoline published in trade papers, it remained only for the majors to control the refinery price and the situation was in their hands.

The advent of the petroleum code under the National Recovery Act gave them their golden opportunity. With much fanfare as to doing something about marketing, they bent their entire efforts to perfecting control of production and refining and when the code didn't work fast enough to suit them they resorted to illegal pool buying of gasoline as was disclosed in the recent criminal convictions in the oil trials at Madison, Wis.

In the period from 1933 to date, thousands of jobbers have, as independent entities, gone out of business. The means have been many. Sometimes "squeezed" and forced to sell because of operating losses, lack of cash, and so forth; other times purchased by refiners at fair figures because such major refiner wanted to complete a distribution set-up in a certain State. At times the jobber has been induced to lease his plant for a term of years and then has been signed up for a year or so as an agent; the trick being that while the lease of the properties was for a term of years the contract of employment was for a shorter period, after which the jobber has been let out by merely lowering his commission for the next following year.

From 1933 to date not only has the margin been reduced but the jobber's costs of doing business have increased. This was officially recognized in 1935 in the so-called Blazer committee report where it was said:

> In marketing operations, we find that small jobbers have suffered because of increased labor costs with little or no corresponding increase in margins.

At times there may be a question as to whether a so-called independent jobber is really independent in aynthing but spirit. Some former jobbers have leased their plants to integrated refiners and operate them as the refiner's agent, receiving goods on consignment. The spirit of that man may be independent but actually he is no longer in control and while the law may classify him as an "independent contractor" for social security and other tax purposes (things which the integrated companies like to avoid), he can no longer be truly classed as an independent oil jobber.

As they dominate the tank-wagon markets, the integrated oil companies, through their purchases of gasoline from independent refiners and by their sales to jobbers on contract, have been able to fix and maintain tank-car prices in recent years.

It may interest you to know that in the period from March 1, 1935, to March 3, 1936, 16 major oil companies, all defendants on trial for conspiracy to fix gasoline prices (at Madison, Wis.) purchased 24,052 tank cars of refined gasoline from 34 independent refiners located in the 5½ counties comprising the East Texas oil fields. The records of the Federal Tender Board No. 1 at Kilgore, Tex., will prove the above statement. (Also, see exhibits, 1032, 1033, and 747, Madison Oil Trial.)

In 1935 the major oil companies instituted what has been styled the Iowa or dealer plan of marketing. The passage of a drastic chain-store tax law by Iowa was the immediate impetus to this movement. The plan was to keep control of the retail outlets and yet dispose of legal and tax responsibility. The plan was also an endeavor to set up an individual, properly controlled as to his source of supply and operations, and yet holding him out to the public as an independent merchant.

By this plan the majors saved chain-store taxes, social-security taxes, workmen's compensation and public liability, wages and hours regulations, labor-union and other difficulties, and utilized a former employee upon which to unload the responsibility. Let the so-called independent dare buy from other than his lessor and a short-term cancelation clause in his lease would be taken advantage of by the supplier.

This move has no doubt saved the major oil companies some of their previous losses in the retail end. But as they control the premises and only lease them out they have control of the output. They still retain control of the tank-wagon posted price so that a reduction in service-station price within the dealer's margin no longer comes out of their share. In fact where leased stations fail to hold up to the major company's estimate of gallonage for that station the evidence indicates that major oil company salesmen have encouraged the lessee dealer operators to reduce their prices. It isn't a strange thing in the oil business for the major oil companies to be generous in cutting the other fellow's margin down so long as their profits are not affected.

The testimony in the first Madison oil case (*United States* v. *Standard Oil Company* (*Indiana*) *et al.* (No. 11365, criminal), in which the jury brought in a verdict of guilty, discloses the method by which the major oil companies illegally conspired to raise the tank-car price of gasoline in the Middle West. The plan was to keep the jobber margin at 5½ cents, of which 3½ cents went to the dealer and 2 cents to the jobber. Actually the way the refinery price was manipulated the jobber's net margin was less than 2 cents for a long period.

In the east coast a similar arrangement was worked out. The New York Harbor price for gasoline was regulated by pegging the Gulf coast price and the tanker rates. In addition the majors entered into an illegal marketing agreement which permitted the jobber the same gross of 2 cents and the dealer 4 cents.

By domination of the tank-car market of refined petroleum products and by control of the wholesale and retail prices therefor it can be seen that the Standard companies exercise the power of fixing the ceiling and pushing up the floor at will. Caught in that squeeze is the independent oil jobber. The floor started rising in 1933 and not long thereafter the ceiling started lowering. Thus the jobber is caught between the upper and the lower millstones.

I desire to say a word about the members of the National Oil Marketers Association. Questionnaires from our members indicate that none of them have ever, to their knowledge, handled so-called "hot oil." They sell under their own brand names or the brand names of their supplying companies. They are not market demoralizers as the term is used in the industry. Perhaps this is due to the fact that in recent years there has not been sufficient margin to operate on profitably even when selling at the maximum price allowed by the Standard Oil Co. The oil profits of the majors in the past several years have been garnered from production, transportation by pipe lines, barges and ships, and refining.

Price cutting as we know it today has in many cases been of the subsidized variety. I might recommend that you read the testimony in the Michigan investigation to get a good account of how bogus independents are used.

The whole history of the integrated oil companies engaging in marketing has been a continuous series of unfair practices. It is high time the distribution of petroleum products were separated from any domination, influence, or control from the producing, manufacturing, or transportation branches. Distribution is peculiarly adapted to local operation and when unmolested by integrated units can give better service at no increase in cost and still make a profit.

There is something that your committee can do about it. Certainly the answer is not more regulation, but on the contrary, less regulation. Until the advent of the Connally Act, the interstate oil compact, and the Bureau of Mines forecases the independent oil jobber enjoyed a fair local business and a reasonable return on their investments. The consumer secured petroleum products at fair prices.

Our petition to this committee is that you repeal the legislation that has already proven to be aiding the oil monopoly. We ask you not to carry that control further as proposed by H. R. 7372. The one thing that has prevented complete control over the production of oil is the competition that has come from new fields that are not prorated. This bill is undoubtedly aimed at closing that gap.

We contend that competition is still the life blood of American business. Competition is the best remedy against monopoly or monopolistic practices. But an industry half controlled and half competitive will not long remain in that position; either the control features will have to be extended to guarantee everyone down to the pump, his fair share of the consumer price or the control features will have to be eliminated and competition restored.

There is one further request I have to make. If your committee deem it advisable to report H. R. 7372 then we implore you to take steps to promptly bring about divorcement of the transportation facilities (pipelines and tank ships) and the divorcement of marketing from refining and production of oil.

Mr. Cole. Mr. Hadlick, there is some legislation pending before Congress now dealing specifically with the recommendations you have just made.

Mr. Hadlick. Yes; Congressman Harrington's bill, H. R. 2318, and a companion bill in the Senate, by Senator Gillette, S. 448, provides for divorcement of marketing. There are also bills on pipe-line divorcement, H. R. 7136 by Congressman Izac and S. 2181 by Senator Gillette.

Mr. Cole. That is a bill which is before the Judiciary Committee?

Mr. Hadlick. Mr. Harrington's bill is before the Judiciary Committee and, as I understand, Mr. Izac's pipe-line divorcement bill has been referred to the House Interstate and Foreign Commerce Committee.

Mr. Cole. I expect that is where both of them should have come, but hearings were held on the other bill.

Mr. Hadlick. I had nothing to do with the reference, of course, Mr. Chairman. It was referred to the Judiciary Committee and I asked for a hearing and a hearing was accorded me. No report has been made by the subcommittee to my knowledge. Mr. Healey, who is chairman of the subcommittee, has been constantly engaged in the Labor Board hearings since that time and I do not know whether his subcommittee has even met on the question.

I may say further that we have also approached this matter of divorcement from another angle, and that is endeavoring to have the Department of Justice bring a suit under the present law, because we feel that if there was justification for divorcing the meat packers from the operation of local meat markets, as was done in 1920 under the Sherman Act, there is certainly justification in this case.

I thank you, Mr. Chairman.

Mr. Cole. Thank you, very much.

STATEMENT OF JOHN F. BUDKE, FRANKLIN, PA.

Mr. Cole. We will hear Mr. Budke.

Mr. Budke. My name is John F. Budke, of Franklin, Pa., and I am submitting a prepared statement of Mr. John E. McComb, producer of oil in Venango County, Pa., formerly member of the Pennsylvania Oil Commission, on behalf of certain small oil producers of Venango County, Pa.

Mr. Cole. Where is Mr. McComb?

Mr. Budke. Mr. McComb is right here.

Mr. Cole. Why does he not present his own statement?

Mr. Budke. He asked me to submit it for him—if you have no objections.

Mr. Cole. If he is here, why not present it himself; why not present it yourself, Mr. McComb?

Mr. Budke. I will be very glad to have him do so.

Mr. Cole. It is very unusual to have someone read another man's statement.

Mr. McComb. Not being an attorney, and Mr. Budke is, I asked him to present it.

Mr. Cole. You are just going to read the statement?

Mr. Budke. That is right. I am sure that Mr. McComb will be glad to have any questions asked that you desire to ask, at the conclusion.

Mr. Cole. You are Mr. John F. Budke?

Mr. Budke. Yes, sir.

Mr. Cole. Where do you live, Mr. Budke?

Mr. Budke. Franklin, Pa.

Mr. Cole. All right, you may proceed.

Mr. Budke. The petroleum industry first devoted its efforts to providing illuminating oil and some crude lubricants. In later years the development of motorized transport has been such that a considerable portion of industry and transportation facilities of the Nation are dependent upon the oil industry for fuel and lubrication. So extensive is the use of the internal combustion engine that it may be said that its use now affects and touches in some way the lives of practically every person in the United States.

The development of that engine and automotive transport have been made possible by the availability of cheap fuel and adequate lubrication. The motorized transport has found its greatest use and conferred its greatest benefits in those parts of the world where gasoline and lubricants have been cheap. The United States has had and possesses vast petroleum reserves and in the United States motor transportation has been most highly developed.

THE IMPORTANCE OF CONSERVATION

Petroleum is a vital source of energy for transportation, industry, and, of course, the national defense. It is essential that there shall be available for a long period of time an adequate supply of petroleum. As a result of this requirement, government and the petroleum industry are confronted by the necessity of determining how petroleum reserves may be best conserved.

The question is whether the public interests may be best served by conservation within the industry or by governmental supervision, and, if governmental supervision is required, to what extent should it be imposed?

RESERVES OF PENNSYLVANIA OIL CONSTITUTE A RESERVOIR OF SPECIAL LUBRICANTS

The special qualities of Pennsylvania oil have made it especially essential as lubrication for airplane and automobile engines. The requirements of the automotive industry and the airplane industry are such that the available supply of Pennsylvania grade crude oil has been, in effect, constituted a national reserve of special lubricants. Other qualities of the oil are well described in a statement contained in a preliminary report prepared by the Pennsylvania Oil Investigation Commission. On page 1 of that report the following is found:

> Although the American petroleum industry originated in Pennsylvania, the State now holds preeminence in only one respect; that is, in the high quality of its crude. This comes from the fact that Pennsylvania crude has a paraffin base, contains no sulfur and has a lubricating content of 23 percent as compared to a lubricating content of only 3 percent for crude oil in the United States generally. In refining practice at the present time manufacturers are able to produce 1⅒ gallons of lubricating oil from a barrel of western oil; whereas, a barrel of Pennsylvania crude yields approximately 9 gallons of lubricants.

THE EFFECT OF PRODUCTION IN OTHER FIELDS UPON CONSERVATION IN THE PENNSYLVANIA AREA

In the Pennsylvania area continued depressed prices have brought small producers to the verge of bankruptcy. Their leases have been operated for years with the smallest possible expenditures for equipment. In years past producers have been unable to receive recovery costs for crude produced in the southern area. Their wells in many cases have reached the end of their economic life, not through exhaustion of irreplaceable crude but rather through the exhaustion of the materials with which they were equipped. The failure of equipment has often resulted in the flooding of the oil sands which were totally destroyed or greatly impaired for future productivity. The depressed prices have been influenced by uneconomic and wasteful production in the oil fields of the United States. Mr. William J. Brundred in the Penn Grade Bulletin published by the Pennsylvania Grade Crude Oil Association, on page 9, of the June 1934 issue, stated:

> Our course to a large extent is charted by the national course of the oil industry, but within that general trend we do move and have in the past moved semi-independently to a surprising degree.

The production of Pennsylvania crude is influenced by the national production although the special nature of Pennsylvania crude occasionally permits price fluctuations not in accord with prevailing national price trends.

THE EFFECT OF WASTEFUL PRODUCTION PRACTICES IN THE PENNSYLVANIA AREA UPON THE RESERVES OF PENNSYLVNIA OIL

The large producing companies assert that they employ conservation methods. These companies are established for the purpose of making profits. It is to be supposed that their attitude toward conservation is governed by their profit requirements. The large oil producers have utilized pressure of different kinds in reclaiming oil lands. The utilization of the pressure is sometimes called reclamation although it is not necessarily conservation. The manner in which conservation is practiced in developing reclamation projects with pressure and the rapidity with which the oil is removed from the reclaimed sands is solely within the discretion of those who utilize the pressure.

If the unique qualities of Pennsylvania oil are considered in connection with the national use for the oil and the available oil reserves, the question as to the adequacy of the conservation practices must be determined by a consideration of the unique qualities of Pennsylvania oil, the extent of the reserves, and as to whether or not, in view of these circumstances, there is wasteful production.

It has been stated in certain areas that the lifting cost of oil per barrel is less where the water flooding is used than where the normal methods of production are utilized. Where the production cost is less, the oil may be sold for less. In those regions where the water pressure is utilized, oil may be produced and profitably sold at a price lower than that for which it can be produced in other large productive areas. The consequence of such production, if it is considered wasteful or improper, is that it has the effect of maintaining prices at a point where the owners of thousands of acres of land must abandon their enterprises with resultant loss.

There is in Pennsylvania another source of waste. There are laws which pertain to the plugging of abandoned wells. These laws have been found to be inadequate largely because of inadequate enforcement. In this connection, as well as in other connections, it can be said that there is no supervision of production of Pennsylvania oil other than the supervision imposed by the producers themselves.

AVAILABLE INFORMATION CONCERNING THE NECESSITY FOR CONSERVATION IN PENNSYLVANIA

In Pennsylvania there are long-established companies engaged in the production of petroleum. Their profitable operation over a number of years has given to them a dominant position in the industry. They produce much of the petroleum and it is natural that they should produce much of the information concerning the conservation methods which they follow. The following quotation from a preliminary report prepared by the Pennsylvania Oil Investigation Commission (p. 5) is interesting in that it reveals the situation which exists in Pennsylvania, and which report was prepared by Samuel P. Ross, professor of economics, Carnegie Technical Institution.

Mr. COLE. What is the date of the report?

Mr. BUDKE. Mr. McComb, can you give me the date of the report?

Mr. MCCOMB. I do not know.

Mr. BUDKE. I will give you the date later.

Mr. COLE. All right.

Mr. BUDKE [reading]:

> In the long run the price of Pennsylvania crude is determined by a multiplicity of factors. In the short run the price is determined by the judgment of large purchasers and sellers as to what the price would be. Testimony indicates that in the short run the price is usually set by the South Penn Oil Co. and by the Standard Oil Co. of Pennsylvania (Oil City, 76, 132). The position of the South Penn Oil Co. is strategic. It is both the largest producer and largest purchaser of Pennsylvania grade crude. In addition, it frequently carries from 2,000,000 to 3,000,000 barrels of oil in storage.
>
> The affiliation of the South Penn Oil Co. with the Pennzoil Co. enhances its strategic position. Being the largest producer, the largest purchaser and seller, having an affiliation with a refining company and possessing the ability to fix prices in the short run constitutes a situation fraught with the possibility of public illfare.

The quotation refers to the extent of the control of prices, but is here principally of interest because it reveals that the principal factors in the oil industry in Pennsylvania are vitally interested in maintaining the system whereby they were established in their present influential position. While it is not stated that these companies do not practice conservation, it is not to be supposed that they would admit the need for supervised conservation which might operate to place unprofitable restrictions upon their operations.

THE NEED FOR CONSERVATION

Now, as to the need for conservation, I might state conservation and supervision. The gas industry is supervised, the natural gas industry, yet no one can say that the natural gas industry affects directly the lives of so many people as the petroleum industry. Transportation through the utilization of petroleum products affects everyone in the Nation and might therefore, the petroleum industry, might be considered a proper industry for regulation. Formerly the milk industry was not regulated, but the milk industry has been considered of vital public importance and now in Pennsylvania and in other States it is regulated.

Mr. Chief Justice Taft has well described an industry which is clothed with the public interest. He has stated as follows:

> The expression "clothed with a public interest," as applied to a business, means more than that the public welfare is affected by continuity or by the price at which a commodity is sold or a service rendered. Businesses which though not public at their inception may be fairly said to have risen to be such and have become subject in consequence to some Government regulation. They have come to hold such a peculiar relation to the public that this is superimposed upon them. In the language of the cases, the owner by devoting his business to the public use, in effect grants the public an interest in that use and subjects himself to public regulation to the extent of that interest although the property continues to belong to its private owner and to be entitled to protection accordingly.

The attitude of the large companies in the oil industry may not be distinguished from the attitude displayed by other industries when they were confronted by a need for regulation. Most industries which are now regulated opposed the regulation and practically the same arguments and opposition to supervision or control are always advanced. In Pennsylvania many years ago the lumber industry was busily engaged in removing the timber from the vast timber lands of Pennsylvania. At that time, had there been an attempt to control the industry, the argument would have been advanced, no doubt, that the timber of this Nation was almost inexhaustible. The proponents of this argument would have been sincere, for at that time they did not have in mind the future lumber requirements of the Nation. They did not understand that timber would be scarce and the price of lumber high. Nor did they understand the effect upon the Nation of the destruction of the timber and its influence upon the flooding of rivers.

Today, the producers of petroleum say that we have a practically inexhaustible supply of petroleum. The Government, as distinguished from individuals, must look into the future and must endeavor to maintain an adequate petrolum supply for the people over as long a period as possible. It is true that additional supplies of petroleum have been found as the demand for petroleum products has increased, but who is there who can say that if the advancement in chemistry and engineering is as great as it has recently been or if it is accelerated that we will continue to develop new sources of supply to meet a vastly increased need.

The timber operators here mentioned might have, had an attempt been made to regulate them, asserted that they were following practices of conservation. Yet it is only reasonable to believe that had their hearts been filled with conservation their arms would have been strengthened in cutting down the virgin timber of Pennsylvania by the urge to produce more and more timber so that they could make more and more profits.

The existence of our petroleum reserve should be safeguarded and the waste of petroleum prevented. The proposed bill is meritorious in that it seeks to eliminate waste and as a conservation measure it is entitled to careful and favorable consideration.

Mr. William J. Brundred, president of the Brundred Oil Corporation in Oil City, Pa., delivered a speech before the Pennsylvania Grade Crude Oil Association at State College, Pa. on June 14, 1934 which speech is reported in the June 1934 issue of the Penn Grade Bulletin. In that speech Mr. Brundred has said:

> It would seem, therefore, that to a limited extent, determining the conditions under which we operate lies within our own control, and I hope cooperation, willingly or under capable Federal control if necessary, will bring about improved conditions in the future.
>
> That such cooperation or control is necessary for stabilizing of the industry has been apparent for many years—the germs of the present control were first born in the Coolidge administration with the appointment by him of the Federal Conservation Board. They grew rapidly in the Hoover administration under Secretary Wilbur, not in such a way as to bring practical results but in the evolution necessary to accustom the industry to the thought and later acceptance of the control plan as now developed under the Roosevelt administration.
>
> Control is essential. I mention past history familiar to us all for but one reason—it is this, three successive administrations of different political thought feel alike the necessity of conservation of our natural resources and control of production from flush or low lifting-cost areas to prevent destruction of the Nation's settled oil reserves. In connection with what follows, I would like you to keep that thought uppermost in mind—conservation of our stripper wells and underground reserves.

The small oil producers in the aggregate produce a large quantity of oil. They are without the means, generally, to assert their point of view and by the very nature of things their destiny is often controlled by the dominant factors in an industry.

It is therefore submitted that the legislation here under consideration should be accorded careful consideration to the end that there may be adequate supervision of conservation methods utilized in the production of petroleum.

I might say that this statement is made by Mr. McComb on behalf of a number of small oil producers in Venango County, Pa., who are lessees of approximately 4,000 acres of land and operate approximately 600 wells. Mr. McComb, who was on the Pennsylvania Oil Commission during the investigation in Pennsylvania is very pleased to provide any information which may be requested.

Mr. COLE. Thank you very much.

Mr. BUDKE. Thank you, Mr. Chairman.

STATEMENT OF THE HONORABLE MIKE MONRONEY, OF OKLAHOMA, IN OPPOSITION TO THE COLE OIL BILL

Mr. Chairman and members of the committee—I am joining with the governors of nine oil producing States, almost all independent oil producers, and others interested in the welfare of the petroleum industry to protest most vigorously against the legislation now pending before you, H. R. 7372, known as the Cole oil bill.

Laudable as the purported objectives of the bill may be, that is in conserving our national supply of petroleum and natural gas, I feel that the remedy to purported waste in the oil industry is much worse than our current or future ills.

Everyone knows that under independent operation American oil production, mechanical advances in production, refining, and utilization of petroleum byproducts has astounded the world. Granted that there has been waste, some of it perhaps avoidable, I do not believe that this proposed bill would in the end eliminate or reduce such waste.

Immediately after the passage of this legislation, writing into our law a delegation of all authority of Congress to a Commissioner of Petroleum to make life and death laws over our third largest industry, we would have confusion confounded to such a point that the large petroleum production industry would be at a standstill for many many months. Confusion in current production methods, uncertainty regarding the future of this large industry in regard to even its simple continued operation would more than offset any small gains that Federal control might expect to make.

One reason for the tremendous oil production in the United States has been the ability, skill, and daring of the men who "wildcatted" the unknown territories in search for oil. They were the prospectors who opened the wealth of the earth through risking all they owned or could borrow on the hope of finding new oil pools hidden two to six thousand feet underground.

And today we would, under this Cole bill, undertake to regiment this group of the industry that has in a lifetime developed the industry to its present high state of production and efficiency.

One of the world's leading wildcatters once said, "Oil is where you find it." This man, now dead, risked many times his fortune to play a hunch or a slim geological indication that there was a pool within the territory being explored.

Under this spirit other men, too, opened the vast American oil pools, because there was freedom of action, wealth and ingenuity in the business.

This present law will put these men under the thumb not only of the "Commissioner of Petroleum" but under "in addition any associate commissioner, deputy commissioner, agent or agency designated by the Commissioner."

Rules and regulations, formulated by the Commissioner or his horde of associates, deputies, or agencies, would cripple and hamstring the progressive oil independent producers.

By giving this horde of assistants the right to govern in a dictatorial manner, writing its own laws and rules without any veto or consideration by the duly elected representatives in Congress or in the several States, all constitutional authority is swept away and delegated to such agency.

Even a casual reading of the bill makes one wonder to what extent in regulation this step indicates present trends in government. For imposed in the wide grant of powers, if one studies the bill, is the authority for this Federal Oil Commissioner and his many assistants to rule like a czar over all destinies of our oil producing industry.

It assumes that these Federal agents will be omnipotent in what is their own ideas of proper conservation means. As a matter of fact, the men who have their life savings at stake in these fields, too have an interest in conservation. I know enough about the oil business, and the oil engineering experts to know and realize that many, many times the types of proper conservation methods, machinery, and inventions are subject to widely divergent opinions. But this bill puts all understanding, all authority, and the right to all decisions in the hands of the Commissioner and his many assistants.

Under this law machinery or devices destined to conserve would and could be ruled out by the Commissioner and his associates on their own "ideas" of conservation, whereas ofttimes men who had spent a lifetime in the industry would disagree. But the order could come down from Washington and do away with prevailing successful methods of time tested efficiency. Only a long and tedious lawsuit, at large expense to the producer could save him from unfair and unwise orders. And then determined after a long legal fight in the courts, no redress is permitted him for his loss during the pendency of the suit.

Again I say, laudable as is the objective of this bill for the conservation of oil, I have not seen any great efficiency or intelligence exhibited by Federal bureaus that would convince me that they could do a better job of conserving our national resource than the individual oil-producing States and the oil production industry as a whole are doing.

I am of the opinion that more than 90 percent of the producers of this Nation are conservation-minded. The progress of the State oil compacts demonstrate this fact. My own knowledge of the industry further inclines me to this belief. Yet under this act, in order to penalize the 10 percent who do not practice conservation, we regiment the 90 percent and saddle them with an unworkable system under autocratic control in order to bring the recalcitrant 10 percent into line.

The same ratio applies largely to the oil-producing States, more than 90 percent of which have good and workable conservation laws while less than 10 percent do not. Yet we would make a mockery of State sovereignity, we would deny to the States the right to regulate an industry solely and strictly within their own borders through this law.

If this bill is constitutional and if Federal authority over State sovereignity can be extended by statutory law over oil production, it can be extended over almost every other line of mining, producing, and manufacturing industry in the United States. I personally do not feel that this continued extension of all Federal authority over the lives and businesses of the individual States is either desirable or constitutional. Neither do I feel that the Federal Government, by most of its extension of authority, has justified through present experience its ability, experience, or bureau organization to carry on such continuing regulation.

This law, as in other laws passed for regulation, leaves far too much to the discretion of the administrator and his assistants. Through this law all oil-producing States would be rendered impotent for conservation enforcement—while a great industry waited and worried for the Commissioner and his associates to act and promulgate rules under which they must in the future operate or face convictions and fines of $1,000 per day or imprisonment of not more than 2 years or both.

So broad is this law that any person who "indirectly controls the acts or omissions of any person who shall be liable under this section shall likewise be liable"—

My experience has been that authority already existing in the Federal Government for the correction of many of the most pressing ills that beset the oil producers—has seldom been exercised in the benefit of good conservation practices. I refer to the right, unquestioned, of the Federal Government to regulate interstate commerce. Yet it is common knowledge and has been for more than a decade that certain combinations of oil-refining interests control the domestic price of crude oil and may, at their will, effect such price declines as to eliminate from our national resources and oil reservoirs, the hundreds of thousands of small stripper wells. These "stripper wells," as you know depend upon a fair market price for their continued operation and recovery of the millions of barrels of oil underlying them.

Past action by Federal authorities, however, does not indicate that we yet know how to cope even with this real problem of "interstate commerce." Then why extend Federal authority into the production realm with its manifold problems of production, its thousands of independent producers each with individual production problems that would defy bureaucratic solution. You can't write a fair regulation that can be successfully administered out of a Washington office and not work a hardship on the hundreds of persons affected by it.

In closing, I wish to state that I still feel there is much progress to be made in oil conservation. I feel that this authority should rest with the States—and that Federal Government could be of immeasurable help in this matter through enlarging their experimental services. Even model conservation laws, enacted by the States and enforced by them so far as the production is within the States, could be helped by the Federal Government.

All this and more could be done—without this law to force the States to surrender their sovereignty, their rights, and without putting every oil producer, no matter how small or how large, under the domination of a Washington bureau.

Mr. Cole. I will insert at this point in the record a copy of resolutions passed by the Independent Oil Producers' Association of Illinois over the signature of John Pugh, president; copy of resolutions passed by the board of directors of the Oil Producers' Agency of California, over the signature of W. A. Russell, secretary; copy of Senate Joint Resolution No. 5 of the State of California, protesting against Federal regulation as presented to the committee by Mr. Fox, of the Oil Producers' Agency of California; copy of Operating Regulations to govern the production of oil and gas on State and private lands in Montana, chapter 56, laws of 1925 of the State of Montana, which was requested, as I recall, as a part of the testimony of Mr. H. P. Jackson of the oil conservation board and it may be referred to the Governor's testimony. I do not remember. It is inserted at the request of John W. Bonner, counsel of the board of railroad commissioners of that State. I will also insert in the record at this point a copy of resolutions passed by the Ohio Pertoleum Marketers' Association, Inc., Columbus, Ohio, over the signature of Robert A. Warfel, executive secretary; a letter from His Excellency Hon. Herbert H. Lehman, Governor of the State of New York; also a summary statement on the oil and gas resources of Illinois and their geologic occurrence, prepared by Dr. Alfred H. Bell, head of the oil and gas division, Illinois State Geological Survey, with illustrations, which was requested by the committee. Also I have sundry other telegrams and letters pertaining to this matter, which in view of a call of the House, I will insert in the hearings at a later time.

(The resolutions and other material above referred to are as follows:)

RESOLUTION OF THE INDEPENDENT PETROLEUM ASSOCIATION OF ILLINOIS

Whereas H. R. 7372 for the establishment of Federal control and supervision of the petroleum industry of the United States, generally known as the Cole bill, is now before the subcommittee of the House Committee on Interstate and Foreign Commerce for hearings and consideration; and

Whereas the officers and directors of the Independent Oil Producers Association of Illinois have given full consideration to the wording and the purport of this bill for the creation and maintenance of a Federal Department of Petroleum Conservation, giving to said department and its director what we feel would be arbitrary and dictatorial powers over the petroleum industry which are unwarranted in the light of the adequate laws and regulations now in force and effect in most of the oil-producing States; and

Whereas a program for similar conservation regulations is now under way in Illinois, sponsored by this association and supported by the owners of more than 80 percent of the State's petroleum production, and with reasonable assurance of early enactment which would bring practically all petroleum production in the Nation under the supervision of the Oil States Compact Commission. Therefore be it

Resolved, That we oppose any attempt to bring the petroleum industry of this country under any further degree of Federal control and administration than at present exists; and

That we feel that the terms of the proposed Cole bill are inimical to the best interests of the oil-producing States, the producers and their royalty owners, and the consumers of the Nation; and

We therefore voice our unequivocable opposition to the enactment of H. R. 7372—the Cole bill—and delegate to the Independent Petroleum Association of America and its proper representatives the authority to represent this association in the hearings before the Cole subcommittee and the Congress, and that the original of this resolution be forwarded to Representative William P. Cole, Jr., chairman of the subcommittee of the House Committee on Interstate and Foreign Commerce, and copies forwarded to all members of the Illinois congressional delegation.

Signed this 17th day of February 1940, A. D., at Centralia, Ill.

JOHN PUGH, *President*.

Attest:

C. J. HAAS, *Secretary-Treasurer*.

A RESOLUTION OF THE BOARD OF DIRECTORS OF OIL PRODUCERS AGENCY OF CALIFORNIA, A TRADE ASSOCIATION COMPOSED OF 300 OIL PRODUCERS RECORDING OPPOSITION TO H. R. 7372

Whereas a bill for the ostensible purpose of aiding in conservation of petroleum reserves of the Nation has been introduced into the Congress and numbered H. R. 7273; and

Whereas such conservation of petroleum reserves is said to be necessary for national defense purposes; and

Whereas scrutiny of said H. R. 7372 shows that its provisions would fail to further conservation of petroleum reserves, but would merely centralize control of the American petroleum industry in a Federal Bureau of Washington; and

Whereas the national defense is best served by healthy, capable, and unfettered private industry; and

Whereas various conservation bodies in the several oil producing States, including the voluntary system in effect in California, effectively prevent waste of petroleum reserves, therefore be it

Resolved by the Board of Directors of Oil Producers Agency of California, That this association of independent oil producers hereby reaffirms its opposition to Federal control of the oil industry by recording its opposition to the proposed enactment of H. R. 7372; and be it further

Resolved, That the officers of this organization are hereby instructed to do everything within their power to make known to Congress and its representative committees the true state of affairs in the California oil industry and views of the oil producers of California.

The undersigned secretary of Oil Producers Agency of California hereby certifies that the above resolution was adopted by the board of directors of oil Producers Agency of California at its regular meeting held in the city of Los Angeles on the 9th day of August 1939 and that said resolution is still in force and has not been set aside.

[SEAL] W. A. RUSSELL, *Secretary.*

[S. J. Res. No. 5. Introduced by Senator Wagy, February 9, 1940. Referred to Committee on Governmental Efficiency]

SENATE JOINT RESOLUTION NO. 5—RELATIVE TO HOUSE BILL NO. 7372, RELATING TO FEDERAL CONTROL OF OIL AND GAS PRODUCTION IN CALIFORNIA

Whereas the State of California is one of the States of the Union wherein oil and gas are produced, refined, and made available for the uses of mankind; and

Whereas the production of said natural resources is obtained in this State from three classes of lands: (1) Public lands owned by the United States of America as an incident of national sovereignty; (2) lands owned by the State of California by virtue of its sovereignty as a State; and (3) lands owned in fee by private persons and other private entities; and

Whereas the right to regulate the method and manner of such production from national lands is solely within the jurisdiction of the Government of the United States; and

Whereas the right to regulate the method and manner of such production from State lands is solely within the jurisdiction of the government of the State of California; and

Whereas the State of California in its sovereign capacity as a State has assumed and asserted jurisdiction over the method and manner of such production from privately owned lands in the State of California by passage of laws calculated and designed to prevent waste of oil and gas in the exploration for and production and refining thereof, to the extent deemed best in the wisdom of the legislature of the State and subject to the will of the people of this State, expressed in accordance with our Constitution; and

Whereas there has been introduced into the Congress of the United States a bill, known as House bill 7372, providing for exercise of jurisdiction by the Government of the United States over all production of crude oil and gas in the State of California and in other States; and

Whereas said bill, if passed, would infringe upon the sovereignty of the State of California: Now, therefore, be it

Resolved by the Senate and Assembly of the State of California, jointly, That the State of California hereby respectfully protests the assertion of jurisdiction evidenced by the pendency of H. B. 7372, in the belief that the passage thereof would be an infringement of the sovereignty of the State of California as one of the United States of America; and be it further

Resolved, That the Secretary of the Senate is hereby instructed to transmit copies of this resolution to the President of the United States, to the presiding officer of the United States Senate, to the Speaker of the House of Representatives, to the Honorable Clarence F. Lea, Chairman of the Interstate and Foreign Commerce Committee of the House of Representatives, and to the Honorable William P. Cole, chairman of the subcommittee thereof.

OPERATING REGULATIONS TO GOVERN THE PRODUCTION OF OIL AND GAS ON STATE AND PRIVATE LANDS IN MONTANA

Chapter 56, Laws of 1925. Approved April 22, 1927

Board of Railroad Commissioners, Montana, Oil and Gas Well Division, Helena, Mont.

INTRODUCTION

Chapter 56, laws of 1925, provides that the board of railroad commissioners of Montana is required to supervise the drilling, abandonment and plugging of oil and gas wells on all lands, except those owned by the United States, within the State of Montana, and requires the board to adopt and promulgate the same regulations from time to time prescribed by the Bureau of Mines, of the Interior Department of the United States.

The following rules and regulations have been adopted by the board in conformity with the rules and regulations of the United States Bureau of Mines and will govern oil and gas operations on all lands, except those of the Government, within the State of Montana except where modified by special orders.

DEFINITIONS

The following terms used in these regulations shall have the meanings here given:

Supervisor: An agent appointed by and with the power to act for the board of railroad commissioners of Montana.

Representative: local representative: Any employee of the board of railroad commissioners who is designated by the supervisor to act for him in any specified part or all of the State.

Board: When reference is made to the "board" it shall be understood to mean the board of railroad commissioners of Montana.

Operator: The term operator shall be understood to refer to any and all persons, companies, corporations, syndicates, or partnerships conducting oil or gas operations on lands included in these regulations.

WITH WHOM TO DEAL

Operations.—In matters pertaining to drilling and producing operations the operator should deal with the supervisor or his local representative.

STATE LANDS

In matters pertaining to the leasing or purchase of State lands interested parties should deal with the register of State lands, Helena, Mont.

TAXATION

Property tax: On machinery, tools, buildings, real property, etc. Assessed by county assessor and tax paid direct to county.

Oil production tax: Two percent on value of all crude oil produced. Paid quarterly to State board of equalization, Helena, Mont., on blanks furnished by that board.

Net proceeds tax: On net proceeds of all operations after allowing certain deductions. Reported yearly to State board of equalization, Helena, Mont., on blanks furnished by that board.

Corporation license tax: One percent on net earnings less arbitarry deduction of $2,500. Reported annually to State board of equalization, Helena, Mont., on blanks furnished by that board.

PURPOSE OF SUPERVISION

The board will require that operators comply with these regulations and operate their properties in a manner in keeping with the best practice for the locality. Inasmuch as any specific and binding regulations drawn for one field may not be applicable to other portions of the State, the following regulations are purposely board in scope, the details of interpretation being left to the supervisor.

Sec. 1. Powers and duties of supervisor: It shall be the duty of the supervisor directly or through his representatives:

(*a*) To visit from time to time lands where operations for the discovery or production of oil and gas are conducted, to inspect and supervise such operations with a view to preventing waste of oil and gas, damage to formations or deposits containing oil, gas, or water or other mineral deposits, injury to life or property, or economic waste; and to issue, in accordance with the provisions of existing regulations, such necessary instructions to operators as will effiectively prevent such waste or damage.

(*b*) To make reports to the board as to general conditions and the manner in which operations are being conducted and the departmental orders are being obeyed and such other information as the board may require.

(*c*) To prescribe the manner and form in which all records of operations, reports, and notices shall be made by operators.

(*d*) To require that tests shall be made to detect wastes of oil and gas, as well as the presence of oil, gas, or water in a well, and to prescribe or approve the methods of making such tests.

(*e*) To require the correction, in a manner to be prescribe or approved by him, of any condition existing subsequent to the completion of a well which is causing or is likely to cause damage to any formation bearing oil, gas, water, or other mineral deposits or which is dangerous to life or property or wasteful of oil or gas.

(*f*) To determine the percentage of the potential capacity of any gas well which may be utilized when, in his opinion, such action is necessary to protect the gas-bearing formations. He shall likewise specify the time and method for determining the potential capacity of gas wells.

(*g*) To assist and advise operators making tests and carrying on experiments for the purpose of increasing the efficiency of operation.

(*h*) To compile records of production of oil and gas.

(*i*) To require, by written notice, immediate suspension of any operation or practice contrary to the requirements of these regulations, or to the written orders of the supervisor or his representative until the operator shall have complied with such requirements or orders.

Sec. 2. Requirements for operators: (*a*) The operator on State lands shall conform to the terms of his lease and all operators shall conform to these regulations and to the written instructions of the supervisor or his representative and shall take precautions to prevent waste of oil or gas, damage to formations or deposits bearing oil, gas, water or other mineral deposits, injury to life or property, or economic waste.

(*b*) The operator shall designate in writing the name and postoffice address of a local or resident representative on whom the supervisor or other authorized representative of the board of railroad commissioners may serve notice or with whom he may otherwise communicate in securing compliance with these reuglations. The resident representative of the operator shall be designated before drilling or other operations are begun.

If said designated representative shall at any time be absent from his designated address and no substitute representative has been designated to act in his stead, any employee of the operator who is on the premises, or the contractor or other person in charge of operations shall be considered the representative of the operator for the service of written orders or notices and service in person or by ordinary mail upon any such employee, contractor, or other person shall be deemed service upon the operator.

(*c*) The operator shall not drill any well within 220 feet of any of the outer boundaries of the land being developed except as may be necessary to protect himself against off-set wells on other lands and then only on consent first had in writing from the supervisor.

(*d*) The operator shall not begin to drill, redrill, make water shut off or formation test, deepen, shoot, plug, or abandon any well, or alter the casing in it without first notifying the supervisor of his plan or intention and receiving approval prior to commencing the contemplated work.

(*e*) The operator shall permanently mark all rigs or wells in a conspicuous place with his name or the name of the actual operator and the number or designation of the well and shall take all necessary means and precautions to preserve these markings.

Abandoned wells shall be marked with a permanent monument which shall consist of a piece of pipe not less than 4 inches in diameter and not less than 10 feet in length, of which 4 feet shall be above the ground level, the remainder being embedded in cement. This pipe shall be capped with a screw cap.

(*f*) The operator shall keep on the promises or at his headquarters in the field accurate records of the drilling, redrilling, deepening, plugging, or abandoning of all wells and of all alterations to casing, records to show all the formations penetrated, the content of oil, gas, or water in each formation, and the kinds, weights, landed depths, and sizes of casings used in drilling the wells. Within 15 days after the completion of any well and within 15 days after the completion of any further operations on it the operator shall transmit to the supervisor copies of these records on prescribed forms furnished by the supervisor. The operator shall also submit such other reports and records of operation as may be required in the manner and form prescribed by the supervisor.

(*g*) In drilling in "wildcat" territory or in a gas or oil field where high pressures are likely to exist the operator shall take all proper precautions necessary for bringing the well under control at any time and shall provide at the time the well is started the proper high pressure fittings and equipment required for such work.

Good practice under such conditions requires that the conductor string of casing be cemented around the casing shoe.

(*h*) When drilling with cable tools the operator shall provide at least one properly prepared slush pit, into which he must deposit mud or cuttings from clay or shale free of sand that will be suitable for the mudding of a well, except when he is drilling in a proved area where it is known that such precautions are not necessary. When required, a second pit must be provided for sand pumpings and other material extracted from the well during the process of drilling that are not suitable for mudding.

(*i*) When drilling with rotary tools, the operator shall provide when required by the supervisor or his representative an auxiliary mud pit of suitable capacity in which he can maintain a supply of extra heavy mud for emergency use in case of blow-outs or lost circulation. When required, surplus mud and cuttings shall be confined in suitable pits.

(*j*) The operator, by methods approved by the supervisor or his representative, shall effectually shut off and exclude all water from any oil or gas bearing stratum and shall make a casing and water shut-off test before suspending drilling operations or completing the well and drilling into the oil or gas sand.

The operator shall also effectually test for commercial productivity all formation that give evidence of carrying oil or gas, the test to be made in a manner approved in advance by the supervisor. Unless otherwise specifically approved by the supervisor or his representative, formation tests shall be made at the time the formations are penetrated and in the absence of excessive back pressure from a column of water or mud fluid.

(*k*) The operator shall not deepen an oil or gas well for the purpose of producing oil or gas from a deeper stratum unless the upper productive strata are properly protected.

(*l*) The operator shall prevent any oil or gas well from blowing open and shall take immediate steps and exercise due diligence to bring under control any "wild" or burning oil or gas well or any water well.

(*m*) The operator shall operate his wells in such manner as to eliminate, as far as possible, the formation of emulsion, or so-called B. S. If the formation or emulsion, or B. S., cannot be avoided and the oil cannot be recovered from the emulsion by usual methods of treatment, the operator shall treat the oil to put it into a marketable condition if it can be recovered at a profit. To avoid excessive losses from evaporation or "burning the oil" the operator shall not heat emulsified oil for the purpose of breaking down emulsions to temperatures above the minimum temperatures required to put the oil into marketable condition.

(*n*) B. S. and salt water from tanks or well shall not be allowed to pollute streams or damage the surface of adjoining land. If the B. S. cannot be treated or burned and the volume of salt water is too great for disposal by seepage and evaporation, the operator should consult the supervisor or his representative regarding its disposal and dispose of it under some approved method.

(*o*) All oil run from leased State lands shall be gaged according to methods approved by the supervisor. The operator shall provide tanks suitable for containing and accurately measuring the crude oil produced from the wells and shall furnish to the supervisor or his representative two acceptable copies of all tank tables. The operator shall not, except during an emergency and except by special permission of the supervisor or his representative, confirmed in writing, permit oil to be stored in earthern reservoirs or in any other receptables in which there may be undue waste of oil by seepage or evaporation.

(*p*) Before abandoning a well the operator shall submit to the supervisor a statement of reasons for abandonment and his detailed plans for carrying on the work, together with a copy of the log in case it has not already been submitted, and shall proceed with the abandonment only on receiving the written approval of the supervisor and in the manner prescribed by such official.

No producing oil or gas well shall be abandoned unless it is demonstrated that further operation is commercially unprofitable.

(*q*) The operator shall prevent the waste of natural gas or its wasteful utilization. The use of gas in its natural state in engines, pumps, or similar equipment where its pressure is the direct operating force is prohibited unless the exhaust gas is conserved for use as fuel or unless special permission is obtained from the supervisor.

(*r*) The operator shall exercise reasonable precaution in providing against accidents and fires and shall make a full report to the supervisor of all accidents or fires which occur.

(*s*) The operator must immediately obey all orders intended to carry out the terms and spirit of these regulations. Subjects of controversy may be settled in conference between the operator and the supervisor but the supervisor shall have final authority subject to the right of appeal as provided in section 5 hereof.

Sec. 3. Oil royalties: Oil royalties accruing to the State of Montana from operations on State lands shall be paid in accordance with the terms of the lease or contract between the operator and the State board of land commissioners.

Sec. 4. Reports to be made by operator.

INTRODUCTION

In operating to know the property is to know the individual wells on it. For this reason much of the information requested concerns individual wells. Experience has shown that these data are necessary for engineering studies that often enable the supervisor to offer valuable advice on the handling of properties. Forms for making reports to the supervisor, described in this section, can be obtained from the supervisor or his representative, and such forms, unless others are specified by the supervisor, must be used by the operator. Operators must fill out all forms completely and file them punctually with the supervisor.

Monthly report of operations (*Form 329b*).—This form is required as a regular monthly report, regardless of the status of operations, and must be filed with the Board of Railroad Commissioners, oil and gas well division, by the 10th of the succeeding month.

Log of well (*Form 330b*).—The operator shall furnish to the supervisor or his representative, upon his demand, a partial or complete log of any well and shall file in duplicate with the supervisor not later than 15 days after the completion of each well a complete and accurate log on Form 330b.

The operator shall require the drillers, whether company labor or contract labor, to record accurately the depth, character, fluid content, and fluid levels, where possible, of each formation as it is penetrated, together with all other pertinent information called for by this form. The practice of compiling logs from memory, sometimes after the work has been completed, will not be permitted.

Sundry notices and reports on wells (*Form 331b*).—Form 331b covers all notices and all reports pertaining to individual wells except those for which special blanks are provided. This form may be used for any of the purposes listed, or a special heading may be inserted on the blank to adopt it for use for similar purposes. Any written intention to do work or of change in plans must be filed in duplicate unless otherwise directed and must reach the supervisor and receive his approval before commencement of the work.

One copy of the form will be returned to the operator if and when approved and will constitute his authority to begin work. The operator is responsible for receipt of the notice by the supervisor in ample time for proper consideration and action. If in case of emergency any notice is given orally or by wire and approval is obtained, the transaction shall be confirmed in writing as a matter of record.

The examples following illustrate some of the uses to which Form 331b may be put.

Notice of intention to drill (*Form 331b*).—The notice of intention to drill a well must be filed in duplicate with the supervisor and approval received before the work is commenced. This notice must give the location in feet from property lines and, if possible, the elevation of the derrick floor and the geologic name of the surface formation; also an estimate of the depth at which and the stratum or formation in which the oil or gas is expected and approximately the depths at which specified strings of casing will be set or landed; also the weight of the sizes of casing proposed to be set or landed at these depths, and a statement as to whether any cementing, mudding, or other special work is contemplated.

Notice of intention to change plans (*Form 331b*).—Owing to unexpected conditions, it may become necessary to change the plans of proposed work in connection with either the drilling or the repair of wells. Complete details of these changes should be submitted in duplicate to the supervisor and approval obtained before the work is undertaken.

Notice of date for casing and water shut-off test (*form 331b*).—As exclusion of water from oil and gas bearing strata is one of the most important items of conservation, the supervisor or his representative will witness as many casing and water shut-off tests as possible. Form 331b should be filled out and filed in duplicate with the supervisor in advance of the approximate date on which the operator expects to make the test. Later the exact date may be fixed by agreement.

Report on result of casing and water shut-off test (*form 331b*).—If the supervisor or his representative authorizes but does not witness a casing or water shut-off test, the operator shall submit in duplicate a statement signed by the employee in charge of the work giving details and results of the test. The information given must be complete and include such items as depth of shut-off; head of water found; depth and thickness of water strata penetrated before landing pipe; weight, nominal diameter, and depth of casing in the hole; fluid levels before and after test; length of time the well stood for each test; depth drilled out below shoe, if any; note of oil or gas showing; length and character of bridge, if used; method of shut-off; amount and name of cement and time given to set; and any other pertinent data.

Notice of intention to redrill or repair well (Form 331b).—If it seems desirable to make repairs in or to deepen a well, a detailed written statement of the plan of work shall be made in duplicate to the supervisor and approval obtained before the work is started. In work that affects only rods, pumps, or tubing or other routine work, such as cleaning out, no notice or report will be necessary.

Notice of intention to shoot (Form 331b).—Before shooting any well, for any purpose, notice of intention to shoot shall be given to the supervisor in duplicate and approval obtained before shooting is done. When the notice of intention to shoot becomes a part of a notice of intention to redrill, repair, or abandon a well, the supervisor may accept such notice in lieu of a separate notice of intention to shoot.

The notice of intention to shoot must be accompanied by the complete log of the well to date, provided the complete log has not previously been filed, and must state the object of shooting, the size and kind of the proposed shot, the exact location and distribution of the explosive in the well (by depths), and the name of the company that is to do the shooting. The notice shall also contain an accurate statement of the daily oil and water production, if any, at the time the notice is filed or at the date of last production.

Subsequent record of shooting (Form 331b).—After shooting any well a subsequent record of shooting must be filed in duplicate with the supervisor. This record shall be filed separately on Form 331b within 30 days after the shooting is done, except where such shooting record constitutes a part of the log (Form 330b) or a part of a record of other subsequent work done (Form 331b) or a part of an abandonment record filed within that period. The subsequent record of shooting shall include a statement of the size of the shot and the nature, exact location, and distribution of the explosive used in the well (by depths). The record shall contain also an accurate statement of the average daily production of oil and water for at least a 10-day period prior to the filing of the report. In addition, this report should include other pertinent information, such as depth of cleaning out, time spent in bailing and cleaning out, and possible injuries to the casing or the well.

Record of perforating casing (Form 331b).—Usually a statement covering the details of perforated casing in a well is made on the log form. When perforations are made after the log has been sent in a report of the work shall be made in duplicate to the supervisor on Form 331b. Prior notice need not be given for such work, except that if it is intended to perforate casing that has excluded water from the well a notice in duplicate of intention to perforate and approval of the supervisor are necessary before the work is begun.

Notice of intention to pull or otherwise alter casing (Form 331b).—If it is desired to pull a portion or all of a string of casing, or to rip, perforate, or otherwise alter casing that has excluded water from a well, a notice (Form 331b), of such work must be given in duplicate and the approval of the supervisor obtained before the work is started. When it is desired only to add casing without deepening the well and without altering the water string already in the well, it will be sufficient to report the operations on a subsequent notice of work done.

Notice of intention to abandon well (Form 331b).—Before beginning abandonment work on any well, whether drilling well, oil or gas well, water well, or so-called dry hole, notice of intention to abandon shall be filed in duplicate on Form 331b with the supervisor and approval obtained before the work is started.

The notice of intention to abandon must show the reason for abandonment and must be accompanied by a complete log of the well to date, provided the complete log has not been filed previously, and must give a detailed statement of the proposed work, including such information as kind, location, and length of plugs, by depths, and plans for mudding, cementing, shooting, testing, and removing casing as well as any other pertinent information.

Subsequent report of abandonment (Form 331b).—After abandoning or plugging a well a subsequent record of work done must be filed in duplicate with the supervisor. This record shall be filed separately, Form 331b, within 30 days after the work is done except where such record constitutes a part of the log, Form 330b, or record of other subsequent work done, Form 331b, and is filed within that period.

The subsequent report of abandonment shall give a detailed account of the manner in which the abandonment or plugging work was carried out, including the nature and quantity of materials used in plugging and the location and extent, by depths, of the plugs of different materials. Records of any tests or measurements made and the amount, size, and location, by depths, of casing left in the well as well as a detailed statement of the volume of mud fluid used, the pressure attained in mudding, and the names and positions of employees who carried out the work. If the well was shot this report must include a complete statement of the shooting, giving the details as called for under "Subsequent Record of Shooting."

Supplementary well history (*Form 331b*).—A report of all work done on any well since the filing of the log form (Form 330b) or the last report covering work on well shall be filed in duplicate with the supervisor on Form 331b within 30 days after the completion of the particular work, or before, if called for by the supervisor.

Sec. 5. The operator must immediately obey all orders intended to carry out the terms and spirit of these regulations whether issued directly by the supervisor or sent to the operator or his agent by ordinary mail, but any such order, after being put into effect by the operator, shall be subject to review by the Board of Railroad Commissioners of Montana upon appeal to said board filed with the supervisor within 30 days after the order has been served.

Approved by the Board of Railroad Commissioners of Montana April 22, 1927.

Daniel Boyle, *Chairman.*
Leonard C. Young, *Commissioner.*
Lee Dennis, *Commissioner.*
E. G. Toomey, *Secretary.*

Resolution by Ohio Petroleum Marketers Association, Inc., Columbus, Ohio, Opposing Cole Bill (H. R. 7372)

Whereas there has been introduced and is now pending in Congress a measure commonly known as the Cole bill (H. R. 7372) proposing to create a Federal Office of Petroleum Conservation under the Department of the Interior with authority by statute and related regulations to exercise control over the production of crude oil in the various States; and

Whereas the production of crude oil is already subject to control by appropriate legislation enacted in all but two of the principal oil-producing States and such control or regulation appears to have been efficiently exercised by the various regulatory bodies of such States; and

Whereas legislation of similar character and intent is contemplated in other States in which substantial amounts of crude oil are produced; and

Whereas in the various States having such legislation control of production has been so exercised as to protect properly natural resource energy and at the same time to maintain reasonable parity with the current requirements of consumption; and

Whereas the petroleum industry has always successfully operated as a free enterprise and by individual initiative and private endeavor has from time to time located new reserves and developed additional sources of supply of crude oil, has produced constantly improved motor fuels, lubricants, and other petroleum products and has supplied those products at reasonable prices while employing labor at liberal wages; and

Whereas Federal regulation and control of production of petroleum will constitute an unwarranted invasion of the field of private enterprise, will create conflict of authority and will indirectly affect refining and marketing operations and thus result in bureaucratic control of the oil industry, which is both unnecessary and contrary to the spirit of American institutions: Now, therefore, be it

Resolved, That the board of directors of the Ohio Petroleum Marketers Association, Inc., an organization composed of jobbers of petroleum products operating in the State of Ohio, does hereby oppose the enactment of the so-called Cole bill as both unnecessary and unwarranted; and be it further

Resolved, That the secretary of said association be and he is hereby directed to forward a copy of this resolution to the chairmen of the committee now conducting hearings upon said bill with the request that said resolution be included in the record of such hearings and that he be further directed to forward a copy of such resolution to both Senators and to all Representatives from the State of Ohio in the National Congress.

The foregoing is a true and exact copy of a Resolution which was adopted by the board of directors of the Ohio Petroleum Marketers Association, Inc., at a meeting duly called and conducted on December 21, 1939.

ROBERT A. WARFEL,
Executive Secretary.

STATE OF NEW YORK,
Albany, February 10, 1940.

Hon. WILLIAM P. COLE,
Chairman, Subcommittee on Petroleum Investigation,
Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D. C.

MY DEAR CONGRESSMAN COLE: It is my opinion that the oil-producing States should be given full opportunity to prevent waste in the production of oil. This I believe they can best do through the Interestate Oil Compact Commission.

I understand that great progress has been made by the oil-producing States in increasing the efficiency of oil production and in conserving this irreplaceable resource. It would seem to me that the Federal Government, should step in only when the States have shown their inability to cope with the situation through joint action.

Very sincerely yours,

HERBERT H. LEHMAN.

STATE OF ILLINOIS,
STATE GEOLOGICAL SURVEY DIVISION,
Urbana, February 10, 1940.

Hon. WILLIAM P. COLE, JR.,
Chairman, Petroleum Investigation Subcommittee,
Committee on Interstate and Foreign Commerce, Washington, D. C.

DEAR MR. COLE: I am sending you enclosed a Summary Statement on the Oil and Gas Resources of Illinois and their Geologic Occurrence prepared by Dr. Alfred H. Bell, head of our oil and gas division. The text is accompanied by five illustrations and two tables. I trust that you will find this statement satisfactory for your purpose.

If we can be of service by furnishing further information, I hope you will call on us.

Yours very truly,

M. M. LEIGHTON, *Chief.*

A SUMMARY STATEMENT ON THE OIL AND GAS RESOURCES OF ILLINOIS AND THEIR GEOLOGIC OCCURRENCE

(By Alfred H. Bell, geologist and head, oil and gas division, Illinois State Geological Survey, Urbana, February 10, 1940)

Up to January 1, 1940, Illinois had produced 551,000,000 barrels of crude oil• Of this, 426,000,000 came from the old southeastern Illinois field which was discovered in 1905, reached a peak in the years 1908–10 and then gradually declined; 11,000,000 came from oil fields in western Illinois; and 114,000,000 from "new" fields, discovered since January 1, 1937, located mainly in the Illinois Bason (fig. 1).

More than half of the oil in the old fields came from the Pennsylvanian, the remainder largely from the Mississippian, with only about 1 percent divided between the Devonian and Ordovician. No oil has yet been produced commercially from the Silurian in Illinois nor from the Ordovician below the "Trenton" limestone. In the new fields about 99 percent of the oil has been produced from the Mississippian, about 1 percent from the Devonian, and practically none so far from the Pennsylvanian.

The records of annual production from 1905 to 1939, inclusive, and monthly production for the years 1937, 1938, and 1939 are shown graphically in figure 2. Prior to 1937, the State's production record was largely that of the southeastern Illinois field which had contributed 97.5 percent of the total up to that date. During the period 1910–36, no important new fields were discovered and accordingly, the graph of the State's production for these years is essentially the decline curve for a single field.

In the light of subsequent development, the question may be asked: Why did interest in the exploration for new oil fields in Illinois decline almost to the vanishing point during this quarter century period? Several factors contributed: First, although much wildcat drilling was carried on at the time the Southeastern Illinois field was being developed, most of it was without scientific guidance and no important new fields were discovered. The discovery of large fields in the midcontinent region at the time Illinois production began to decline drew many of the operators away from Illinois. Second, according to prevailing theories of oil migration and accumulation, the central areas of basins were considered unfavorable to the occurrence of oil. Third, glacial drift is present in almost the entire basin area, and over large areas it prevents or renders difficult the determination of bedrock structures by studies of the surface geology.

The discovery of a major oil field near Mount Pleasant, Mich., in 1927 in the center of the Michigan Basin, necessitated revision of earlier geologic theories regarding the oil possibilities of basins. In a map prepared and exhibited by the Illinois State Geological Survey in 1930 (fig. 1) the deep parts of the Illinois Basin were included with the territory which was given the highest rating for oil possibilities in the State. This forecast has been remarkably confirmed by subsequent development as 53 of the 54 new fields discovered in the last 3 years are in the area which was given the highest rating.

In spite of the presence of glacial drift in most of Illinois, outcrops of Pennsylvanian bedrock are abundant in limited areas. Detailed studies of Pennsylvanian stratigraphy under new concepts of sedimentation which were begun in 1927 gave a precision of correlation not previously attained and demonstrated the presence of local structures favorable to the occurrence of oil in the Illinois basin. The results of some of these studies were published in 1936.[1]

When the interest of the larger oil companies led them to become active in the area, geophysical methods, especially the reflection seismograph, came to be of major importance in the discovery and mapping of favorable structures in the Illinois Basin. The presence of some of these structures was previously suggested by geologic data but most of them are in areas where outcrops are rare. A torsion balance traverse across the Illinois Basin was made by an oil company in 1930, but it did not result in any exploratory drilling although it is said to have yielded interesting evidences of structure. The same company pioneered in the use of the reflection seismograph in Illinois, beginning in the fall of 1935, and a large block of land was leased in the central part of the basin. Ever since 1935 the reflection seismograph has been in constant use in the Illinois Basin; the number of parties active at one time has varied from 6 or 8 up to 16.

GEOLOGIC OCCURRENCE OF OIL IN ILLINOIS

The areal distribution of the bedrock formations in Illinois is illustrated in figure 3. In approximately four-fifths of the area of the State, rocks of Pennsylvanian age are uppermost. The Pennsylvanian area is bordered by older rocks in northern Illinois and along the Mississippi and Ohio River Valleys to the west and south. The relationships of the various rock systems are made clear in the cross-sections, figure 4. The major unconformity at the base of the Pennsylvanian system is evident in the cross-sections. Going northward from the depeest part of the basin, the older systems successively wedge out bringing progressively older strata into contact with the base of the Pennsylvanian. Thus in the vicinity of La Salle, Pennsylvanian sandstone is in contact with the St. Peter sandstone of Ordovician age, and the Chester, lower Mississippian, Devonian, Silurian, and upper part of the Ordovician system are absent although they are present farther south in the basin. A geologic column for southern Illinois is given in table 1.

The form of the basin is illustrated by the subsurface contour map (fig. 5). It may be compared to the bowl of a spoon, with the deepest part of the bowl to the south and east. The most prominent feature, aside from the basin itself is the La Salle anticline which extends in a south-southeast direction for about 200 miles on the eastern side of the basin. The old Southeastern Illinois field is located on this structure.

The new fields located in the deep basin area and the new and old fields in the western part of the basin are located on local structural "highs" (anticlines or domes). Some of these are indicated by bends in the contour lines of figure 5, but most of them are too small to be indicated when such a large contour interval as 500 feet is used. These structures are minor when compared with La Salle anticline, yet they are just as productive of oil and in some cases more productive. Detailed studies of the larger fields indicate structural closures of the order of 100 or 200 feet for the producing sands. The fields in the central part of the basin—Noble, Clay City, Cisne, etc.—seem to be located on local closures along a line of structural deformation that extends approximately 60 miles in a north-northeast, south-southwest direction.

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[1] J. Marvin Weller and Alfred H. Bell: The geology and oil and gas possibilities of parts of Marion and Clay Counties with a discussion of the central portion of the Illinois Basin: Illinois State Geological Survey Report of Investigations No. 40, 1936.

The principal producing formations of the new fields are the McClosky oölitic limestone of lower Mississippian age and various Chester sandstones of upper Mississippian age. For a detailed list of the producing formations, pools where each is productive, and approximate depths see table 2.

SALEM (LAKE CENTRALIA) POOL

The Salem pool merits special comment because of its outstanding rank in the rank in the nation; it was exceeded in production in 1939 only by the East Texas field. Geological indications led the Texas Co. to map the area by seismograph and then acquire a large block of acreage. The discovery well was completed July 6, 1938, thus making the field now 19 months old. Up to January 30, 1,637 wells had been completed, and cumulative production amounted to approximately 58,600,000 barrels. There are 5 producing sands, the Bethel (Benoist), Aux Vases, McClosky, St. Louis-Salem, and Devonian at approximate depths of 1,770, 1,840, 1,990, 2,100, 3,350 feet respectively. Proved reserves in the field are estimated to be at least 250,000,000 barrels.

LOUDEN (BEECHER CITY) POOL

The Louden pool is the largest in areal extent (about 18,000 acres) of the new pools. It was discovered in 1937 following a seismograph survey. The development has been slower than that of the Salem pool because so much of the productive acreage is owned by one company. On January 30, 1940, there were 1,375 producing wells. Production is from the Cypress formation (Weiler sand), Paint Creek stray sand, and the Bethel (Benoist) at average depths of approximately 1,470, 1,530, and 1,550 feet. Proved reserves are estimated at approximately 150,000,000 barrels.

OTHER POOLS

Fifty-two oil and gas pools in addition to the Salem and Louden were discovered in the last 3 years in southern Illinois (fig. 1). They vary in size down to a single well.

At the end of January 1940, there were 5,259 producing wells in the new pools and approximately 13,000 in the old pools. Of a total daily production of approximately 373,000 barrels of oil at the end of January, the new pools were contributing 365,000 barrels and the old pools 8,000 barrels.

Proved reserves in all existing fields are estimated at approximately 600,000,000 barrels. Adding this to past production gives a total ultimate production for the State of 1,150,000,000 barrels. This leaves out of consideration unknown extensions of present fields, unestablished deeper production, and fields yet to be discovered, the number or size of which cannot be predicted. Present indications are that an annual production of the order of 100,000,000 barrels will be maintained for several years.

PRODUCTION METHODS

The great majority of wells in the new Illinois fields are pumped. Some wells flow initially but the flowing life is comparatively short, usually not more than a few months. The amount of gas produced with the oil is small and reservoir pressures are low in comparison to those of many fields in the Midcontinent and Gulf Coast areas. Gas-oil ratios in the oil fields range up to 1,000 or 2,000 cubic feet per barrel. In the Salem pool they are estimated to be about 500 cubic feet per barrel average. With the present daily production of approximately 200,000 barrels of oil in this pool the amount of gas produced is calculated to be approximately 100,000,000 cubic feet. Most of this is burned in flares. However, something like 15,000,000 cubic feet per day is passed through a gasoline extraction plant and a little more than 1,000,000 cubic feet per day is returned to the oil sand in 11 input wells.

The loss of the gas burned in flares is not to be measured merely in terms of the loss of the fuel value. Far more important is the loss of reservoir energy, through not returning the gas to the oil sand to help maintain both the reservoir pressure and the mobility of the oil. Pressure maintenance operations result in prolonging the flowing life of wells, thus reducing lifting costs, and in greater ultimate recovery.

In the Louden pool in Fayette County comparatively little gas is burned in flares, as two compressor plants are in operation for the purpose of extracting gasoline and returning gas to the oil sands in a large-scale pressure-maintenance operation.

WELL SPACING

Wherever possible most companies operating in the new fields of Illinois have adopted some standard spacing for the wells in a particular pool to a particular sand, in most cases 1 well to 10 acres or 1 well to 20 acres. However where ownership is divided into small tracts as in town lots, and lots for schools, churches, and cemeteries, the drilling of wells on these small tracts has necessitated the drilling of many offset wells and has led to close spacing of wells. Thus in a part of the Salem pool (southern part of sec. 5, T. 1 N., R. 2 E.) up to January 3, 1940, 56 wells to the Bethel (Benoist) sand had been drilled on a total of 120 acres or 1 well to 2.1 acres. This compares with a spacing of 1 well to 10 acres for the Benoist sand in areas of regular well spacing elsewhere in the pool.

The proportion of closely drilled acreage out of the total productive acreage in five pools is shown in the following table. These pools include all the most closely drilled areas.

Pool	Total acres productive	Acres of close well spacing	Percent
Salem	8, 870	800	9
Louden	16, 370	370	2
Centralia	2, 190	650	30
Keensburg	700	190	27
Patoka	720	120	17
Total	28, 850	2, 130	7

The drilling of more wells than necessary to obtain the oil in a given area may be considered an economic waste. However, the most serious consequence of concentrating too many wells in certain parts of a pool is the relatively rapid depletion of reservoir pressure and reservoir energy in the overdrilled parts. In contrast to this, the ideal condition sought in the best engineering practice is an even rate of decline in reservoir pressure in all parts of a pool. This necessitates either unit control or voluntary agreement among all the operators in a pool with regard to well spacing.

CONCLUDING STATEMENT

Although the greater part of the oil producing operations in Illinois are being carried on efficiently, the waste of natural gas, and the drilling of unnecessary wells, especially in parts of the Salem pool, are serious, and will result in substantial loss. In the writer's opinion, a State conservation law, well formulated and well administered, would be adequate to take care of the situation, and would result not only in the extension of the productive life of the fields but also in a substantially larger ultimate recovery of oil, perhaps 25 percent.

LIST OF ILLUSTRATIONS TO ACCOMPANY ARTICLE FOR COLE CONGRESSIONAL COMMITTEE

FIGURE 1.—Classification map of Illinois oil possibilities, as prepared by A. H. Bell in 1930, and oil and gas fields discovered in 1937, 1938, and 1939

FIGURE 2.—Graph of oil production in Illinois: annual 1905–1939, inclusive, monthly 1937, 1938, and 1939. (U. S. Bureau of Mines statistics)

FIGURE 3.—Geologic map of Illinois. (Weller, J. M., and Bell, A. H., "Illinois basin": Illinois State Geol. Survey, Illinois Petroleum No. 30, 1937)

FIGURE 4.—Cross-sections of Illinois basin. P, Pennsylvanian; UM, Upper Mississippian; LM, Lower Mississippian; D, Devonian; S, Silurian; O, Ordovician. (Weller, J. M., Geology and oil possibilities of the Illinois basin: Illinois State Geol. Survey, Ill. Petroleum No. 27, 1936)

FIGURE 5.—Subsurface contour map of Illinois basin on base of Kinderhook—New Albany shale. (Bell, A. H., and Cohee, G. V., Oil possibilities of deeper beds in Illinois basin: Oil Weekly, Houston, Tex., June 5, 1939)

LIST OF TABLES

TABLE 1.—Geologic column for southern Illinois.

TABLE 2.—Oil and Gas producing strata in Illinois.

TABLE 1.—*Geologic column for southern Illinois*

System or series	*Formation and lithology* [1]	
Pleistocene	Glacial drift and loess.	
Pliocene	Chert gravel.	
Eocene	Sand and clay	Southern tip of State.
Cretaceous	Sand and clay	
Pennsylvanian	McLeansboro—sh., ss., thin ls., and coal.	
	Carbondale—sh., ls., ss., coal.	
	Pottsville—ss., sh., and thin coal.	
Chester (Upper Mississippian) Series.	Kinkaid—ls., sh.	
	Degonia—ss.	
	Clore—ls., sh.	
	Palestine—ss.	
	Menard—ls., sh.	
	Waltersburg—ss.	
	Vienna—ls., sh.	
	Tar Springs—ss.	
	Glen Dean—ls., sh.	
	Hardinsburg—ss.	
	Golconda—ls., sh.	
	Cypress—ss.	
	Paint Creek—ls., sh.	
	Bethel—ss.	
	Renault—ls., sh., ss.	
	Aux Vases—ss.	
Iowa (Lower Mississippian) Series.	Ste. Genevieve—ls.	Levias—ls. Rosiclare—ss. Fredonia—ls.
	St. Louis—ls.	
	Salem—ls.	
	Warsaw—ls	Osage group.
	Keokuk—ls	
	Burlington—ls	
	Fern Glen—ls	
	Kinderhook—sh., ls., ss.	
Mississippian and Devonian	Chattanooga-New Albany—sh.	
Devonian	Limestone	(formations undifferentiated).
Silurian	Dolomite	
Ordovician	Maquoketa—sh.	
	Kimmswick—ls.	
	Plattin—ls.	
	Joachim—ls.	
	St. Peter—ss.	
Pre-St. Peter	Unidentified.	

[1] ls., limestone; ss., sandstone; sh., shale.

TABLE 2.—*Oil and gas production strata in Illinois*

System or formation		Producing strata [1]	Pool	County	Approximate depth
Pennsylvania	McLeansboro fm	Upper Siggins gas	Siggins	Cumberland, Clark	370
	Carbondale fm	Bellair 500	Bellair	Crawford, Jasper	560
		Casey	Casey	Clark	450
		Dykstra	Junction City	Marion	510
		Wilson	do	do	610
		Claypool	North Johnson	Clark	420
		Lower Siggins	Siggins	Cumberland, Clark	560
		Upper Partlow	South Johnson	Clark	490
	Pottsville fm	Biehl and Jordan	Allendale	Wabash	1,450
		Bellair 800	Bellair	Crawford, Jasper	800
		Pennsylvanian	Carlinville, etc	Macoupin	380
		do	Griffin	Wabash	1,720
		do	Hutton	Coles	530
		do	Jacksonville gas [2]	Morgan	250
		Bridgeport	Lawrence	Lawrence	900-950
		Buchanan	do	do	1,250
		Robinson	Main, etc	Crawford	900-1,000
		Buchanan	Russellville gas	Lawrence	1,090
		Lower Partlow	South Johnson	Clark	600
		Petro	Wamac	Marion	720

[1] Sandstone unless otherwise noted. Revised, Dec. 12, 1939.

[2] Abandoned.

TABLE 2.—*Oil and gas producing strata in Illinois*—Continued

System or formation		Producing strata	Pool	County	Approximate depth
Chester series (Upper Mississippian)	Palestine ss	Palestine	Keensburg	Wabash	1,820
	Waltersburg ss	Waltersburg	Junction	Gallatin	1,760
		do	New Harmony	White	2,150
		do	Storms	do	2,220
	Tar Springs ss	Tar Springs	Ava-Campbell Hill [2]	Jackson	560
		do	Griffin	Wabash	2,090
		do	Mt. Carmel	do	1,950
	Cypress ss	Cypress	Ava-Campbell Hill [2]	Jackson	780
		Carlyle	Bartelso	Clinton	980
		Bellair 900	Bellair	Crawford, Jasper	890
		Cypress	Brown	Marion	1,640
		Carlyle	Carlyle	Clinton	1,030
		Weiler	Centralia	Clinton, Marion	1,200
		Cypress	Cowling	Edwards	1,620
		Carlyle	Frogtown	Clinton	950
		Upper Lindley	Greenville gas [2]	Bond	930
		Weiler	Griffin	Wabash	2,470
		Cypress	Keensburg	do	2,430
		do	Langewisch-Kuester	Marion	1,600
		Kirkwood	Lawrence	Lawrence	1,400
		Weiler	Louden-B. City	Fayette	1,470
		do	Mattoon [2]	Coles	1,830
		do	Noble	Richland	2,550
		do	St. James	Fayette	1,600
		Sparta gas	Sparta [2]	Randolph	850
	Paint Creek ss	Stray	Louden-B. City	Fayette	1,530
	Bethel ss	Benoist	Louden-B. City	Fayette	1,550
		Bethel	Calvin	White	2,710
		Benoist	Centralia	Clinton, Marion	1,350
		do	Cordes	Washington	1,260
		do	Cravat	Jefferson	2,070
		do	Dix	do	1,950
		do	Dubois	Washington	1,360
		do	Fairman	Marion, Clinton	1,430
		do	Salem-L. Centralia	Marion	1,770
		Tracey	Lawrence	Lawrence	1,560
		Benoist	Patoka	Marion	1,420
		do	Sandoval	do	1,540
		do	Tonti	do	1,930
	Aux Vases ss	Lower Lindley	Ayers gas	Bond	940
		Bradley	Cisne	Wayne	2,980
		Aux Vases	Enterprise	do	2,930
		do	Iola	Clay	2,360
		do	Salem-L. Centralia	Marion	1,840
		do	Mill Shoals	White	3,220
		do	Phillipstown	do	2,940
		do	Stewardson	Shelby	1,940
		do	Tonti	Marion	2,010
Iowa series (Mississippian Lower)	Rosiclare ss	Rosiclare	Roaches	Jefferson	2,190
		McClosky "sand"	Aden	Wayne	3,290
		do	Barnhill	do	3,390
		do	Boyleston	do	3,250
		do	Calvin	White	3,190
		do	Cisne	Wayne	3,120
		do	Clay City	Clay, Wayne	2,980
		do	Dundas	Richland	2,840
		do	Elk Prairie	Jefferson	2,720
		do	Enterprise	Wayne	3,040
		do	Flora	Clay	2,970
		do	Goldengate	Wayne	3,370
		do	Grayville	Edwards, White	3,130
		do	Griffin	Wabash	2,790
		do	Lawrence	Lawrence	1,700
	Fredonia ls	do	Leech twp	Wayne	3,410
		Oblong "sand"	Main	Crawford	1,340
		McClosky "sand"	Marcoe	Jefferson	2,750
		do	Mill Shoals	White	3,350
		do	Mt. Erie	Wayne	3,080
		do	New Harmony	White	3,000
		do	Noble	Richland	2,960

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[2] Abandoned.

TABLE 2.—*Oil and gas producing strata in Illinois*—Continued

System or formation		Producing strata	Pool	County	Approximate depth
Iowa series (Mississippian Eower)	Frenonia ls	McClosky "sand"	North Aden	Wayne	3,310
		do	Olney	Richland	3,050
		do	Rinard [2]	Wayne	3,140
		do	Roaches	Jefferson	2,200
		do	Salem-L. Centralia	Marion	1,990
		do	Schnell	Richland	3,010
		do	South Mt. Erie	Wayne	3,130
		do	Stokes	White	3,080
		do	Tonti	Marion	2,130
		do	Whittington	Franklin	2,870
	St. Louis ls	St. Louis ls	Ina	Jefferson	3,000
		Martinsville "sand"	Martinsville	Clark	480
		Westfield ls	Westfield	do	330
		St. Louis ls	Whittington	Franklin	3,060
	Salem ls	Salem ls	Jacksonville gas [2]	Morgan	300
		Westfield ls	Westfield	Clark	3,80+
	Osage Group	Carper	Martinsville	Clark	1,340
Devonian		Devonian Is	Bartelso	Clinton	2,420
		Hoing	Colmar-Plymouth	McDonough	450
		Devonian Is	Decatur	Macon	2,020
		do	Martinsville	Clark	1,550
		do	Salem-L Centralia	Marion	3,350
		do	Sandoval	do	2,920
		do	Sorento	Bond	1,800
Devonian-Silurian		Devonian-Silurian Is	Collinsville [2]	Madison	1,300
Silurian		Silurian Is	Pike County gas [2]	Pike	270
Ordovician		"Trenton" Is	Dupo	St. Clair	500
		do	Waterloo [3]	Monroe	410
		do	Westfield	Clark	2,260

[2] Abandoned.

[3] Abandoned; revived 1939.

STATEMENT OF W. D. BROOKINGS, MANAGER OF THE NATIONAL RESOURCES DEPARTMENT OF THE UNITED STATES CHAMBER OF COMMERCE, WASHINGTON, D. C.

Mr. COLE. Is there anyone else who wishes to be heard?

Mr. BROOKINGS. Yes, Mr. Chairman.

Mr. Chairman, I am here on behalf of President W. Gibson Carey, Jr., of the United States Chamber of Commerce and my name is W. D. Brookings, manager of the national resources department of the chamber.

He has asked me to offer this short letter, which is less than a page, which sets forth the position of the chamber with respect to this particular legislation.

Mr. COLE. Are you going to read it?

Mr. BROOKINGS. I can read it, I think, in about 2 minutes.

(Thereupon, Mr. Brookings read the following letter:)

CHAMBER OF COMMERCE OF THE UNITED STATES,
Washington, February 26, 1940.

Hon. WILLIAM P. COLE, Jr.,
Chairman, Subcommittee, Interstate and Foreign Commerce Committee,
House Office Building, Washington, D. C.

MY DEAR MR. CHAIRMAN: The United States Chamber of Commerce requests this opportunity to record its deep concern over the proposal to place in the Federal Government control of petroleum production throughout the country.

The membership of the chamber approve the method of State control with correlation of State action through interstate compacts as a means of conserving this important natural resource in harmony with the principle of preserving State and local authority, responsibility, and initiative.

Technical details of the processes of producing petroleum, of the measures applied by States for its conservation, and of the Interstaet Oil Compact entered into by States to obtain joint action, have been placed before your committee by representatives of the States and of the industry. They show that the States have appreciated the value of this natural resource and the need of its conservation, and that they have not been derelict in applying measures to that end.

The slowness of one or more States to cooperate fully in the compact movement, and instances of failure within States of proper application of conservation laws should not be permitted to obscure the accomplishments of the States and their determination to solve the problem through their own efforts.

There is no warrant for assuming that the States cannot solve this problem in the public interest provided they are not discouraged by Federal action. The proposed legislation for Federal control would end all hope of a solution by the States.

Sincerely yours,

W. GIBSON CAREY, Jr., *President.*

Mr. COLE. Is that Mr. Carey's individual opinion, or is it the result of some meeting he had?

Mr. BROOKINGS. This is a statement by Mr. Carey of the position of the chamber that has been determined by the membership of the chamber through either a referendum vote or by a resolution at an annual meeting.

Mr. COLE. Can you tell us which of the two; I mean, how did the association have an opportunity to discuss this bill? You say either by a resolution passed at an annual convention, or by a referendum. Can you tell me which?

Mr. BROOKINGS. This has been by resolution at the annual meeting.

Mr. COLE. At the last annual meeting?

Mr. BROOKINGS. At the last annual meeting.

Mr. COLE. Of the United States Chamber of Commerce?

Mr. BROOKINGS. Of the United States Chamber of Commerce.

Mr. COLE. They passed it?

Mr. BROOKINGS. Exactly.

Mr. COLE. They took this action?

Mr. BROOKINGS. Yes, sir.

Mr. COLE. Which is in the form of a resolution.

Mr. BROOKINGS. Yes, sir.

Mr. COLE. Have you a copy of that resolution?

Mr. BROOKINGS. We will be very glad to submit it.

Mr. COLE. I would like to have that.

This letter is merely a restatement of what transpired at the annual meeting, the last annual meeting of the United States Chamber of Commerce?

Mr. BROOKINGS. Yes, sir.

Mr. COLE. On this subject?

Mr. BROOKINGS. Exactly.

Mr. Cole. What was the date of the last annual meeting?

Mr. Brookings. It was in May 1939.

Mr. Cole. May 1939?

Mr. Brookings. Yes.

Mr. Cole. Before you attempt to file such a resolution I think you might get your dates straight. The bill was not introduced at that time. Something is evidently wrong about the position taken by President Carey as you present it. Such legislation was not in existence when the last meeting of the United States Chamber of Commerce was held, at which you say they passed on this legislation.

Mr. Brookings. Well, with respect to——

Mr. Cole. I think you are evidently entirely mistaken about any action of the Chamber of Commerce at an annual meeting in May on this subject, are you not?

Mr. Brookings. The position of the chamber was in support of the general principle of using State compacts to meet problems of this nature. The chamber aims to declare its policies in terms of general principles rather than to deal with particular pieces of legislation.

Mr. Cole (interposing). But, Mr. Brookings, you presented a letter from the president of the United States Chamber of Commerce with an explanation which tells this committee and through these proceedings to the press of the country, that the chamber of commerce at its last meeting discussed the bill before us and passed a solemn resolution dealing specifically with this measure. I merely want to remind you that this meeting to which you refer was held in May 1939 and that the legislation claimed by you to have been discussed at that meeting was not introduced in Congress until July 1939.

Mr. Brookings. This matter also came before the board of directors at a recent meeting. At the last board meeting of the board of directors of the national chamber, this matter was before them, and they made a statement at that time in interpreting the position of the chamber.

Mr. Cole. When was that meeting?

Mr. Brookings. That meeting was in January of this year.

Mr. Cole. Of this year?

Mr. Brookings. I will be glad to furnish it.

Mr. Cole. I want particularly, as a part of your testimony, a copy of the resolution passed in May 1939 meeting of the chamber, the national meeting, wherein they discussed this subject and condemned this legislation.

(Mr. Brookings submitted the statement of the board of directors setting forth the position of the chamber made at their meeting January 25, 1940, and the resolution of the annual meeting in May 1939, as follows:)

Chamber of Commerce of the United States of America,
Washington, February 27, 1940.

Hon. William P. Cole, Jr.,
Chairman, Subcommittee, Interstate and Foreign Commerce Committee,
House Office Building, Washington, D. C.

My Dear Mr. Chairman: In accordance with your request that I furnish for the record copies of resolutions or statements of the chamber in support of statements in the letter of W. Gibson Carey, as president of the United States Chamber of Commerce, submitted to the committee this morning, I attach copy of a statement issued by the board at its meeting, January 26, 1940, and resolution respecting interstate compacts passed at the annual meeting, May 4, 1939.

Sincerely yours,

W. DuB. BROOKINGS,
Manager, Natural Resources Production Department.

CONTROL OF PETROLEUM PRODUCTION

The board of directors of the Chamber of Commerce of the United States, at its meeting January 26, 1940, adopted the following statement in pursuance of policies to which the chamber has been committed by its membership on the subject of Control of Petroleum Production.

"We note with approval the successful efforts of the individual States to control their petroleum resources by means of an interstate compact. We recommend further extension of the State compact plan with only such cooperative Federal legislation as may be required to effectuate conservation statutes of the individual States.

"We are opposed to Federal legislation now proposed in Congress that would take from the States their responsibility for the conservation of their petroleum resources, and that would centralize in the Federal Government complete control over petroleum production.

"With the prospect of early enactment of State legislation covering the only important field where conservation statutes appear to be needed at this time, it is believed that enactment of Federal control legislation would interfere with the furtherance of the compact plan, which in our opinion offers a practical method of meeting the country's problem of conserving its petroleum resources."

Mr. COLE. The committee will stand in recess to meet at the call of the Chair.

(Thereupon, at 11:20 a. m., the committee adjourned to meet at the call of the Chair.)

RESOLUTION ADOPTED AT THE TWENTY-SEVENTH ANNUAL MEETING OF THE CHAMBER OF COMMERCE OF THE UNITED STATES, WASHINGTON, D. C., MAY 4, 1939

PETROLEUM

The Interstate Oil Compact has proved its value as a method of conserving a valuable natural resource and of doing this in harmony with the principles of preserving responsibility and initiative of the States in controlling their natural resources.

An important factor in making the compact effective has been the support of this State action by the Federal Government through the Federal Hot Oil Act of 1935, prohibiting the shipment in interstate commerce of petroleum products produced contrary to the laws of any State. This act, which expires June 30, 1939, should now be continued indefinitely.

HOUSTON, TEX., *February 10, 1940.*

Congressman WILLIAM P. COLE,
Washington, D. C.

Reference to Cole bill regulating oil industry. Please read this telegram to your committee and enter into the minutes of your committee meeting. Texas produces more than approximately 40 percent of the oil of the Nation. Three men of Texas saved the day for the Nation's oil industry. They balanced as near as possible the oil situation of the Nation. If the United States Government could balance their budget as near as what they have done in the past year, our country would be better off. I hope that you will listen to these three men—Lon A. Smith, Ernest O. Thompson, and Jerry Sadler, of the Railroad Commission of Texas. If you do so and weight their ideas you will compliment them upon their good day's work that was well done and you will let the States rights remain in each State's hands without any interference because these men have been just and fair to all operators in the oil industry whether large or small. Many thanks for this favor.

DR. C. M. LUSK.

ABSORBING ILLINOIS

Three years ago the Illinois basin was producing less than 15,000 barrels of crude oil daily, an unimportant factor in the industry's operations.

Last week the same area passed 400,000 barrels daily, and now it occupies a dominant position in oil markets, extending from the wells to the filling stations.

This development, at first considered only of direct importance to Oklahoma and Kansas, has expanded so rapidly and has reached such proportions that it is of significcnce to all operators east of California.

A survey this week shows that all the major and semimajor refineries in the Middle West, with 2 exceptions, are getting part or all of their crude supply from this new source. Approximatly 25 small refiners have sprung up in several States, absorbing a small part of this new crude production.

Latest reports reveal that large and small plants are running 200,000 barrels more crude to their stills daily than they were in 1937, a gain of 50 percent.

Most of the filling stations in Illinois, Indiana, and Ohio—three of the largest consuming States—are now selling gasoline refined from basin crude.

This was the market supplied largely by Oklahoma and Kansas operators who now have outlets for approximately 200,000 barrels less crude than they had 3 years ago. Refiners in the same area have lost a large part of their former market east of the Mississippi River.

More recently the competitive situation has not been confined to the Mid-Continent. It has spread to the eastern part of the United States, where Illinois crude is supplying sources which originally looked to Texas and Louisiana. The high tanker rates from the Gulf to Atlantic-seaboard points, which are now approximately double the Illinois to seaboard pipe-line tariffs, are tending to expand the Illinois marketing area.

Shipments of Illinois crude to Canadian buyers now exceed 30,000 barrels daily.

New pipe lines have been built and existing systems have been greatly enlarged. Some lines which formerly moved crude oil east have been reversed and eastern movement changed to the west.

Eastern systems which saw their crude movements steadily decline over a period of years are now operating to capacity and new lines are possibilities.

It is inevitable that such a major disruption of the industry's operations should have price signficance. The amazing feature is that, so far, the industry has been able to make the necessary adjustments without a major collapse in its markets.

While there has been no breakdown, there is plenty of evidence that this wide-open Illinois development has been largely responsible for the fact that the industry has not profited as it should have from the best two consuming years it ever has had.

This would have been avoided if Illinois last year had enacted a conservation measure similar to those in other States, as requested by operators having most of the production.

All this is history. The fact to keep in mind now is that the time to become panicky has passed. Further expansion in Illinois production is certain and new field possibilities have not been fully determined. But there is reason to believe that the industry has made most of the adjustments that will be necessary to offset these unregulated operations.

The conservation bodies of the older oil-producing States have done a good job in keeping the industry's operations on an even keel while officials of one State, in the interest of political expediency, insisted on rocking the boat to the most of their ability.

LEA COUNTY OPERATORS COMMITTEE,
Hobbs, N. Mex., February 20, 1940.

MR. WILLIAM P. COLE, Jr.,
Chairman, Subcommittee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.

DEAR MR. COLE: While appearing before your committee on February 9, I promised to furnish you with copies of certain information pertaining to oil and gas conservation in the State of New Mexico.

First, minutes of engineers meeting held February 8, 1939, containing information pertaining to pressure maintenance. A copy of these minutes is being mailed you under separate cover.

Second, reference was made to a committee of engineers appointed by the operators to furnish special information regarding high gas-oil ratios in the Monument Pool, Lea County, N. Mex. Quoting from the minutes of an operators' meeting held in the Worth Hotel, Fort Worth, Tex., October 16, 1939:

"The question of gas wastage in the Monument field was brought up and after discussion, a motion was adopted to the effect that a special engineering committee of five be appointed by Mr. Staley to study this subject as well as water ratios and possibility of repressuring with possibility of recommending some method of penalizing the high-ratio wells in order to encourage corrective work to eliminate physical waste. Mr. Staley was instructed to make every effort to have the report from this committee before date of the Oil Conservation Commission hearing."

This committee was appointed and Mr. R. S. Christie, division engineer for the Amerada Petroleum Corporation was made chairman.

Third, quoting from the minutes of Lea County Operators Committee held in Santa Fe, N. Mex., December 7, 1939:

"Mr. R. S. Christie, chairman of the special engineers committee, presented the following recommendation of his committee for a gas displacement factor for wells in Lea County:

"Any well producing with a net gas-oil ratio in excess of 10,000 cubic feet per barrel of oil produced, shall be allowed to produce daily a total volume of gas equivalent to that quantity obtained by multiplying the average unit allowable for Lea County by 10,000. The displacement volume will vary from time to time as the allowable production for units is changed.

"In applying the displacement factor to the unit allowable in a field, the units penalized in daily allowable shall first be set up on the schedule and the remaining oil distributed to the remaining units of the field.

"There are some fields with high-ratio wells producing large volumes of water which may warrant a temporary exception to this rule. Net gas is defined as gas coming from the formation with the oil produced from the well and not returned to the reservoir.

"Within 60 days after the inauguration of this temporary order, a study of all fields shall be made and evidence presented at an open hearing; such evidence to be used as a basis for establishing a proper gas-oil ratio limit for each field, after which an order shall be prepared and made effective immediately.

"That a committee of field engineers be appointed by Mr. Staley to determine a standard method of taking gas measurements for the calculation of gas-oil ratios.

"That a quarterly gas-oil ratio survey shall be made and reported on all wells in all fields in Lea County.

"Submitted by:

"R. S. Christie (chairman), Amerada Petroleum Corporation.

"M. Albertson, Shell Oil Co., Inc.

"L. L. Gray, Gulf Oil Corporation.

"R. Van A. Mills, Continental Oil Co.

"F. E. Heath, Sun Oil Co.

"A motion was then adopted by a majority of the operators present instructing Mr. Christie to present the above recommendation to the Oil Conservation Commission at public hearing called for December 9, 1939, for the purpose of considering the adoption of regulations governing gas-oil ratios in the various producing fields in New Mexico."

I am also mailing you under separate cover rules and regulations for gas-oil ratio survey in New Mexico as submitted to the Oil Conservation Commission by the Lea County Operators; also the rules and regulations that were adopted by the Oil Conservation Commission of the State of New Mexico, order No. 237; also copy of the Commission's order No. 238 regulating and prescribing maximum gas-oil ratios for the various fields in the State of New Mexico.

If there is any other information that we have in our files that would aid your committee, please advise and it will be furnished promptly.

Yours very truly,

GLENN STALEY,
Lea County Operators Committee and Deputy Oil Conservation Commission.

ENGINEERING REPORT OF LEA COUNTY OPERATORS COMMITTEE, HOBBS, N. MEX.

MINUTES ENGINEERS MEETING, FEBRUARY 8, 1939

The meeting was called to order at 1:30 p. m. at the recreational hall of the Humble Oil & Refining Co. in Hobbs, N. Mex. The following company representatives were present:

H. R. Webb	Sun Oil Co.
R. S. Blymn	Gulf Oil Corporation.
R. S. Christie	Amerada Petroleum Corporation.
Ora Van Tuyl	Gulf Oil Corporation.
Edgar Kraus	Atlantic Refining Co.
J. B. Newell	Amerada Petroleum Corporation.
R. E. Rader	Stanolind Oil & Gas Co.
A. J. Holland	The Texas Co.
F. M. Stevenson	Phillips Petroleum Co.
R. A. Koenig	Ohio Oil Co.
H. W. Benischek	The Texas Co.
A. B. Gibson	Cities Service Oil Co.
J. M. Kelly	Lea County Operators Commission.
S. Leach	Humble Oil & Refining Co.
R. G. Schuehle	Shell Petroleum Corporation.
R. U. Fitting	Do.
J. Woodward	Magnolia Petroleum Co.

Engineering problems that will receive attention in the coming year are listed as follows:

1. Bottom hole pressure programs for the various fields.
2. A committee consisting of R. Schuehle, Shell Petroleum Corporation; Ralph Ralph Koenig, Ohio Oil Co. and John Kelly, engineer for the operators, was requested to compile all available information pertaining to "space voidage." This committee will make a progress report at the next regular meeting.
3. All available data pertaining to oil reserves in the various areas will be gathered and tabulated. This information to consist of: (*a*) Productivity index, (*b*) State bottom hole pressures, (*c*) water encroachment, (*d*) thickness of pay, (*e*) saturation, (*f*) gas in solution, (*g*) gas-oil ratio.
4. Subsurface temperatures: (*a*) Locating cement behind pipe, (*b*) gas-oil contact in high gas-oil ratio wells, (*c*) casing links.
5. Paraffin problems.
6. Corrosion.

Edgar Kraus made the following motion and it was seconded by Art Holland and carried unanimously:

"That the New Mexico Geological Society be asked to outline and name the various pools in Eddy County, as has previously been done for Lea County; and that after such action the proration office accumulate data on the past production for each of those areas and hereafter separate Eddy County into such pools or areas on the proration schedule and on the over and short statement."

There was some discussion regarding pressure maintenance in the vacuum pool. It developed that a number of those present were unfamiliar with the principles involved in a pressure maintenance plan, so in order to give every member of the engineers committee the benefit of the data available there is contained herein a brief outline of the objects and results of pressure maintenance, and a bibliography of articles written on the subject.

1. Function of Natural Gas in the Production of Oil by H. C. Miller, U. S. Bureau of Mines.
2. Pressure Maintenance, E. O. Bennett.
3. Pressure Maintenance and Unitization South Burbank Pool, J. S. Salnikor and M. L. Harder.
4. Gas-Oil Ratio Control in Flowing Wells, R. J. Sullivan.
5. Effect of Different Production Rates on Pressure Distribution in East Texas, C. E. Rustler, Jr.
6. Developments in Eastern Production Practice, C. C. Hogg.
7. Advantage of Unitization in Repressuring, J. O. Lewis.
8. Practical Benefits of Pressure Maintenance in Petroleum Production, W. N. Lacey.
9. Improvements and Trends in Production Practice, W. W. Scott.
10. A Plan for the Better Utilization of Gas Energy in the Production of Oil, J. R. McWilliams.

11. Air and Gas Injection for Maintaining Pressure and Repressuring in Oil Producing Properties, H. C. Miller.
12. Surveying the Economic Fields of Repressuring Oil Sands, J. S. Levine, September 20, Oil Weekly.
13. Repressuring as it Increases Ultimate Recovery, J. C. Albright, Jan. 18, 1937, Oil Weekly.
14. Repressuring in the Form of Questions and Answers, H. M. Rider, August 23, 1937, Oil Weekly.

The next regular engineers meeting will be held in Hobs on March 8.

GLENN STALEY,
Chairman, Engineers Committee.

PRESSURE MAINTENANCE

Definition.—Pressure maintenance is defined as the practice of returning gas from flush production to the formation for the purpose of keeping reservoir pressure and energy as near initial conditions as possible. It is distinguished from repressuring, which is the return of gas to producing formations which are partly depleted and from which both pressure and energy have been taken.

History.—The beneficial effects of pressure maintenance, or saving of reservoir energy in connection with oil production, were first advocated by Mr. I. L. Dunn. In 1903, Mr. Dunn successfully demonstrated what could be accomplished by the intermittent injection of gas in a shallow producing well. Continued study of the process was carried on and in 1911, repressuring was conducted by injecting air into depleted or partially depleted wells in Ohio, and the production grealty increased. Results obtained have been the basis of practically all repressuring and pressure maintenance work which has since been undertaken.

In 1913, the importance of the energy in gas produced with oil was slowly becoming recognized. There were but few engineers connected with the oil industry at this date. At this time some work on back pressure control and choking the flow of wells was undertaken. Results of producing rates and their effects upon gas-oil ratios were published in 1914, 1915, and 1916, but were not generally recognized or practiced.

Prior to 1913, gas in connection with oil was looked upon as a necessary evil and it was then common practice to blow a well to rid it of gas in order to recover the oil. This former practice left millions of barrels of oil in depleted sands irrecoverable and lost.

No consideration was given to the potential energy in the gas associated with oil, while its value for fuel purposes was ignored. Today the value of gas in connection with oil is known by all operators and the prevention of its waste is, to a limited extent, obligatory under laws in some States. Fullest consideration of the maximum value of gas in connection with production of oil is given only by a very limited number of producers, other than by producing with gas-oil ratios which will meet legal requirements.

The number of projects involving repressuring of old fields is limited. The number in which pressure maintenance of flush, high-pressure production is carried on, is even less.

More pressure maintenance projects have been started during the past three years than during any other like period. Gas-oil ratio regulations imposed by State regulatory bodies, in the future, will no doubt have much to do with placing this type of operation into effect, where it otherwise would not be considered.

Several repressure projects were started and kept in operation with various degrees of success up to 1916. From this date forward, systematic studies and surveys under the supervision of petroleum engineers were made and excellent results have been obtained in increased recovery. Most operators were yet of the opinion that it was necessary to let the formation pressure dissipate before starting recovery work of this nature.

Bureau of Mines Bulletin No. 148 by Mr. J. O. Lewis, published in 1914, is one of the early publications on the use of air or gas for increasing oil recovery and gives a good resume of the method as practiced up to that time.

In 1926 several major oil recovery projects were started and the first pressure maintenance operations in connection with flush production were put in effect. Pressures above 1,000 pounds were first used by the Marland Oil Co. (now Continental Oil Co.) at Seal Beach, California. In this operation pressures up to 1,800 pounds were used. Here gas was injected to maintain the pressure to prevent edge water encroachment.

The next high-pressure operation was in the Sugarland field in Texas where pressures of 1,350 pounds were necessary to return gas to the formation. This program was started in 1930 and is one of the most successful.

A project at Sulphur, La., has been in operation for some time in which working pressures exceeded 2,000 pounds.

In November 1936 gas was returned to the formation in the Tepetate field, La., with initial working pressures of 3,700 pounds.

Gas is being returned to a pool at Cayuga, Tex., with working pressures of 1,800 pounds.

During the early part of 1938 a pressure-maintenance project was started for returning gas to the Sundance sand in the Lance Creek pool near Lusk, Wyo. Four companies have pooled their interests in this project. The injection pressure is 860 pounds. Six million feet of gas is returned daily.

During the latter part of 1937, seven major companies worked out a satisfactory play for returning gas to the producing zone in the Naval Reserve pool, Osage County, Okla. This pool is under unit operations, the leases being owned by 15 companies. This project is discussed in detail later in this paper.

Two additional high-pressure pressure-maintenance projects are under consideration in Oklahoma, one involving the properties of four major companies, the other, seven. One of these projects will require 1,600 pounds working pressure, the other, 800 pounds. The higher pressure project is in connection with virtually flush production.

A project is being developed in Louisiana where the working pressure for returning gas will be 4,100 pounds. This will be the highest known pressure ever used for the return of gas to the formation.

Effect of maintaining pressure on oil zone.—Practically all high-pressure oil-producing zones contain volumes of free gas above the oil, unless the pressure is so high that all the constituents of the hydrocarbon series lose their phase identity and the gas and oil exist as a substance which is neither liquid nor gas. In addition, there is always a definite amount of gas in solution under the conditions of temperature and pressure existing. The amount of gas in solution per unit volume of oil varies in different pools. It is dependent on the temperature, pressure, and chemical composition of both the oil and gas.

East Texas is a field in which the oil is not completely saturated. It contains less gas in solution than would be normally expected at the existing pressure and temperature conditions. This field is primarily of the water-drive type.

Other pools hold formation oil with varying amounts of gas in solution. A typical deep Gulf-coast field has 1,300 cubic feet of solution gas per barrel of initial oil at 3,600 pounds formation pressure, another but 800 feet per barrel at 4,070 pounds. A pool in Oklahoma contains 701 cubic feet per barrel of initial oil at 2,829 pounds.

FLOWING PRODUCTION

Before any oil can be produced into the bottom of a well, a differential pressure between the well bore and the producing zone must exist. The magnitude of production is dependent upon the differential pressure created, the permeability and porosity of the sand, physical characteristics of the oil.

Under flow conditions the pressure becomes less as the well bore is approached. As the pressure is reduced, gas comes out of solution from the oil and expands to force the residual oil ahead to the point of reduced pressure. The permeability of the producing zone is a measure of the resistance to the flow of oil to the well bore. Formations of low permeability require greater pressure differentials to flow a given quality and quantity of oil than formations of high permeability. The porosity, however, may be the same.

In any particular formation the slowest rate of flow from the well that will permit the oil to be efficiently lifted through the tubing flow string, will generally be the rate which will liberate the least amount of gas from the oil in the formation near the well bore. Such rate will produce the maximum natural ultimate recovery.

The viscosity and surface tension of the oil in the formation are affected by the amount of gas in solution, both being lowered with increased amounts. By maintaining the viscosity and surface tension of oil at minimum values, the smallest differential pressure is required to cause a given volume to flow to a well bore, and the oil is produced with the least amount of energy and pressure reduction in the formation.

When gas is liberated from oil in a formation as it approaches a well bore, the gas expands due to pressure reduction and occupies some of the pore space in the sand formerly occupied by the oil, thus imposing a further restriction to the oil flow, necessitating an increased differential to maintain the same flow rate.

As this process is continued, the gas-oil ratio of the well being produced also continues to increase. High gas-oil ratios cause inefficient flow conditions, high velocities, slippage in the tubing, and flowing by heads. Under such inefficient flow, much more energy is released than would normally be required to raise the oil. The release of such energy is accompanied by an excessive reduction of pressure in the entire producing formation, and the accelerated encroachment of edge and bottom water. It also leaves the residual oil in the formation more viscous and with higher surface tension and adhesive qualities.

With reduced formation pressures, oil at remote distances from well bores becomes more difficult to move, due to decreased energy and increased viscosity, and if the pressure reduction is continued for sufficient time, much of the oil between wells will remain unproduced and premature abandonment, with resulting loss of ultimate recovery will take place. This has been demonstrated by the drilling of producing wells in the center of a group of depleted and abandoned wells. The early return of gas and its continued injection will eliminate such conditions and greatly increase ultimate recovery. In addition, the gas saved will be available for future market.

Methods of maintaining pressure in producing zones.—Unless there is a definite water drive associated with the oil in the formation, it is impossible for original reservoir fluids to compensate for the shrinkage due to oil and gas produced. In pools where oil is produced with inherently high gas-oil ratios, a volume in formation equivalent to several barrels may be voided for each barrel of oil produced.

If water does not move in to occupy the space voided, then both the gas above the oil, and solution gas in the oil, will expand to occupy such space with a resultant drop in reservoir pressure.

If bottom and edge water under hydrostatic pressure move in as the formation pressure is rapidly reduced, certain wells will be overtaken by water and may have to be prematurely abandoned, leaving oil near them irrecoverable.

Unfortunately, bottom and edge water under hydrostatic pressure do not move in uniformly and will finger, channel, or cone up nearest the producing wells where the differential pressure is greatest. The greater the producing rate, the greater will be the coning effect. The uneven approach of water will cause oil to be blocked off and retained in the formation and be made irrecoverable. After water has established a channel to a well it is difficult to retard. Squeeze cement jobs are not able to remedy the conditions.

The water-oil contact may be partly controlled by governing the flow rate of the oil from individual wells that are effected. A careful knowledge of the producing characteristics of each and every well is necessary. Formation pressures throughout a pool are of utmost value in analyzing subsurface conditions and changes.

The best-known means of maintaining pressure in any reservoir is to produce the oil with as low gas-oil ratio as possible and to start, in the very early life of the pool, to return all gas produced. In this manner the pressure drop can be reduced to near that which would occur if only the net barrels of denuded oil were produced. The time to start returning gas is just as the drilling of additional wells defines a poll of sufficient size to justify the operations. This will generally be determined after five or six wells are drilled.

Gas injection at early life of pool.—Many operators state that it is impractical and uneconomical to return gas to a pool while the formation pressure is high. This idea is erroneous, as the energy required to compress gas is not governed by the final pressure, but by the number of ratios through which it is compressed. It takes no more horsepower to compress a given volume of gas from 300 pounds per square inch absolute pressure to 3,000 pounds per square inch absolute pressure, than it does to compress the same volume from 30 pounds absolute to 300 pounds absolute pressure. Dividing the final pressure by the initial pressure gives the compression ratio.

By starting in the early life of a pool, gas may be made available from high-pressure traps or absorbers at pressures sufficient to eliminate one or two stages of compression and the corresponding machinery cost. From such intake pressures, one or two additional stages will be sufficient to compress the gas for return to the formation against any known pressure. The highest known pressures used for the return of gas were at the Tepetate field in Louisiana, where Continental Oil Co. operated with gas up to 4,600 pounds per square inch.

Gas taken off traps under high working pressures contains mostly methane and ethane. Very small quantities of condensable vapors are removed, and the gas is too lean in gasoline content to economically process in a gasoline plant. Such gas may be taken directly to high-pressure compressor intakes for direct return to the formation. This method of operation reduces the size of the gasoline plant required, as it will only have low-pressure gas to process. The small amount of light recoverable ends carried out with the high-pressure gas will ultimately be recovered and their return provides a washing action in the sand tending to increase ultimate recovery.

Gas-oil ratio and water report

COOPER FIELD, DECEMBER 1938

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Amerada Petroleum Corporation:						
Everett	1	C	35-24-37	1,055	21,554	19,296
Do	2	N	26-24-36	1,085	12,000	31,458
Do	3	I	34-24-36	1,132	48,600	2,460
Isbell	1	H	15-24-36	1,531	830	--------
Do	2	A	15-24-36	1,532	575	5,250
Do	3	G	15-24-36	1,532	695	--------
Barnsdall Oil Co.: H. Whitten	1	C	4-24-36	1,505	480	--------
Cities Service Oil Co:						
Everett	1	K	35-24-36	1,557	800	2,950 P
Do	2	N	35-24-36	1,548	1,750	2,630
Do	3	L	35-24-36	1,533	950	2,400 GL
Do	4	K	35-24-36	1,535	875	2,860 GL
Continental Oil Co:						
Gates	1	C	23-24-36	1,528	400	11,625 GL
Do	1	M	26-24-36	1,546	3,072	600
Do	1	P	27-24-36	1,543	400	720 GL
Vaughn	1	M	14-24-36	1,539	400	13,950 GL
Do	2	N	14-24-36	1,539	400	10,075 GL
Do	3	E	14-24-36	1,419	2,985	496
Do	4	L	14-24-36	1,538	400	5,580 GL
Do	5	D	14-24-36	1,544	400	7,750 GL
Do	6	K	14-24-36	1,539	1,295	--------
Do	1	P	15-24-36	1,534	1,315	3,968
Do	3	L	15-24-36	1,533	1,031	--------
General Crude Oil Co:						
Cushing	1	F	23-24-36	1,533	----------	24,580
Meyer	1	I	22-24-36	4,605	----------	18,615
Do	2	P	22-24-36			26,050
Do	3	J	22-24-36			25,400
State F	1	M	2-24-36	1,044	----------	954
Woolworth	1	J	26-24-36	1,538	----------	20,470 P
Gulf Oil Corporation:						
Cooper, G. E	1	M	11-24-36	2,961	34,343	145,500
Ramsey, Arn	1	C	2-25-36	882	1,093	383 P
Do	2	E	2-25-36	1,560	22,000	185,000 GL
Do	3	D	2-25-36	815	1,481	417 P
Humble Oil & Refining Co.:						
Cooper	1	B	25-24-36	355	21,948	40,300 GL
Cooper, J. K	1	F	14-21-36	385	11,325	80,600 GL
Coates	1	B	10-24-36	1,532	1,090	383
Do	2	C	10-24-32	1,532	1,716	2,301 GL
Do	3	D	10-24-32	1,532	1,181	GL
Do	4	A	10-24-32	1,532	1,495	4,602 GL
Harrison	1	M	25-24-36	206	198,495	10,597
Mosely	1	P	10-24-36	1,536	8,881	24,000 GL
Do	2	J	10-24-36	1,535	2,804	36,810 GL
Do	3	I	10-24-36	1,535	2,556	24,100 GL
Thomas	1	O	23-24-36	----------	61,021	58,000 GL
Kan Mex Corporation:						
Gates A	1	D	23-24-36	1,282	----------	--------
Vaughn A	1	O	15-24-36	1,530	----------	-------- P
Vaughn	2	J	15-24-36	1,532	----------	--------
Vaughn, B	1	A	9-24-36	1,534	----------	--------
Do	1	F	3-24-36	1,533	----------	--------
Vaughn	2	D	3-24-36	1,526	----------	--------

Gas-oil ratio and water report—Continued

COOPER FIELD, DECEMBER 1938

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Phillips-Pure:						
Woolworth	1	L	25-24-36	1,101	916	54,292 GL
Do	2	K	25-24-36	1,530	70,740	64,827 GL
Do	3	E	25-24-36	873	32,259	9,006
Do	4	M	25-24-36	1,536	22,157	64,827
Do	5	A	27-24-36	837	18,745	3,896 GL
Do	6	D	26-24-36	889	31,274	17,928
Do	7	N	23-24-26	1,554	12,815	7,497 GL
Do	8	O	22-24-36	1,543	696	210
Do	9	B	27-24-36	1,529	710	9,468 P
Do	10	G	26-24-36	1,532	3,602	75,117
Do	11	F	26-24-36	999	80,660	25,414
Do	13	E	26-24-36	1,642	2,340	13,743 GL
Do	14	L	26-24-36	1,663	7,851	3,258
Do	15	H	27-24-36	1,680	32,290	14,643
Do	16	I	27-24-36	1,637	7,586	10,759 GL
Repollo Oil Co.:						
Whitten	1	P	4-24-36	1,532	540	--------
C. W. Whitten	2	A	4-24-36	1,563	510	--------
C. W. Whitten, B	3	H	4-24-36	1,534	504	--------
C. W. Whitten	4	I	4-24-36	1,534	516	826
Do	5	B	4-24-36	1,534	490	--------
Skelly Oil Co.:						
Coates	1	O	3-24-36	1,522	2,650	--------
Do	2	N	3-24-36	1,522	1,925	--------
Do	3	M	3-24-36	1,522	980	--------
Do	4	P	3-24-36	1,523	1,600	--------
Do	5	I	3-24-36	1,522	2,050	--------
Do	6	K	3-24-36	1,522	2,300	--------
Do	7	L	3-24-36	1,522	1,575	--------
Stanolind Oil & Gas Co.:						
Meyers A	1	H	22-24-36	950	21,759	88,226
Meyers	2	A	22-24-36	1,100	4,335	2,367 GL
Do	3	G	22-24-36	1,250	881	57,009 GL
Do	4	K	22-24-36	1,200	425	94,333 GL
Do	5	B	22-34-36	925	617	52,080 GL
Meyers, B	1	B	26-24-36	(1)	(1)	(1)
Meyers	2	M	11-24-36	1,519	----------	--------
The Texas Co.:						
Everett	1	F	35-24-36	424	410	27,519 P
Ogg	1	G	35-24-36	1,482	2,045	2,338
Do	2	B	35-24-36	1,605	1,105	15,189 P
Do	3	L	35-24-36	1,438	1,895	13,616 P
Do	4	D	35-24-36	1,466	1,178	9,472 P
Do	5	J	35-24-36	1,266	515	65,268 P
Ogg B	1	P	34-24-36	1,545	521	705 P
Ogg	2	H	34-24-36	1,489	575	7,348 P
Do	3	A	34-24-36	1,556	560	59
Tidewater Association Oil Co.: Woolworth B	1	H	35-24-36	1,083	72,000	10,464
Western Gas Co.: Toby	1	P	12-24-36	2,615	----------	396
LYNCH AREA						
General Crude Oil Co.:						
State B	1	I	21-21-34	3,204	----------	3,000 P
State	2	B	21-21-34		----------	750 P
Do	4	I	21-21-34	1,534	----------	370 P
The Texas Co.:						
Lynch A	1	J	34-20-34	1,088	----------	1,073 P
Lynch	2	P	34-20-34	2,197	----------	973 P
Do	3	B	34-20-34	1,352	----------	2,271 P
Lynch B	2	N	27-20-34	187	----------	-------- P
State A	1	H	2-20-34	1,296	----------	32,728 P
State	2	H	2-20-34	3,285	----------	2,401 P
Do	3	B	2-20-34	1,063	----------	2,078 P
Do	4	G	2-20-34	531	----------	18,065 P
NORTH LYNCH AREA						
Cities Service Oil Co.: Dexter	1	P	18-20-34	487	----------	-------- P
The Texas Co.: J. S. Lea	1	E	13-20-24	733	565	-------- P

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[1] Gas wells.

Completion reports

EUNICE FIELD, JANUARY 1939

	Casing and tubing record	Sacks cement
Company, Rush:		
Lease: State A No. 3	Size, 10¾; depth, 138	150
Location: 20–20–37	Size, 5½; depth, 3,584	800
Elevation: 3,520	Size, —; depth, —	----------
Total depth, 3,840	Tubing size, 2; tubing depth, 3,830	----------
Completion date: January 12, 1939	Packer depth, —	----------
Initial production test	Test after acid or shot, 120/12 hr	----------
Company, Continental:		
Lease: Lockhart No. 6	Size, 10¾; depth, 291	225
Location: 18–21–36	Size, 7⅝; depth, 1,476	425
Elevation: 3,631	Size, 5½; depth, 3,775	425
Total depth, 3,891	Tubing size, 2; tubing depth, 3,872	----------
Completion date: January 1, 1939	Packer depth, —	----------
Initial production test	Test after acid or shot, 22/hr	----------
Company, Cities Service:		
Lease: State M No. 1	Size, 9⅝; depth, 1,230	500
Location: 36–21–36	Size, 7; depth, 3,714	175
Elevation: 3,546	Size, —; depth, —	----------
Total depth, 3,840	Tubing, size, 2½; tubing depth, 3,817	----------
Completion date: January 22, 1939	Packer depth, —	----------
Initial production test: 265/1r hr	Test after acid or shot, —	----------

REMEDIAL WORK, EUNICE FIELD, JANUARY 1939

Atlantic, State E, No. 2, section 5–21–36.—Final packer setting in this well has been successful. An Exner-Dodge underset formation packer was set at various points beginning at 3,826 feet and finally at 3,806 feet, 6 inches. The gas-oil ratio on this well was 40,000 before packer setting and 3,920 after setting packer at the allowable rates of flow. This well was originally completed 11/10/35 at the total depth of 3,856 feet for 100 barrels per hour with 4,000,000 feet of gas. The 5½-inch casing was set at 3,778 feet. The elevation of the well is 3,584 feet. The packer setting was completed on December 12, 1938.

Atlantic, State B–2, section 8–21–36.—Packer setting in this well was also successful. With the packer set at 3,851 feet and a Merla flow valve one joint above the packer, the well flows its allowable with gas-oil ratio of 918 after having been acid treated with 3,000 gallons of acid. Before setting packer the ratio was as high as 16,000.

Gulf, Orcutt, No. 3, section 5–21–36.—Prior to work-over well was flowing through choke at the rate of 53 barrels per day with 1,800,000 cubic feet of gas making a gas-oil ratio of 34,700 cubic feet per barrel. A 4-inch outside diameter by 40-inch rubber Robinson anchor packer was set at 3,825 feet but the packer seat gave way when the well was swabbed in. The packer was lowered to 3,829 and the well was swabbed dry below. It was then treated below the packer with 1,000 gallons of acid and on February 5 after it had been flowing 22 hours it made 40 barrels of oil in 1 hour with gas at the rate of 915,000 cubic feet per day making a gas-oil ratio of 2,240. On 2/7 the well tested 135 barrels of oil and 248,000 cubic feet of gas through ½-inch choke making a gas-oil ratio of 1,830 cubic feet per barrel.

Gas-oil ratio and water report

EUNICE FIELD, DECEMBER 1938

Company, Lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Amerada Petroleum Corporation:						
Houston	1	H	7–21–36	1, 535	2, 250	--------
Do	2	A	7–21–36	1, 542	3, 430	--------
Do	3	B	7–21–36	1, 541	1, 091	--------
Do	4	G	7–21–36	1, 546	1, 098	
State W	1	H	30–20–37	1, 447	10, 402	600
State	2	G	30–20–37	642	66, 176	1, 400
Do	3	F	30–20–37	1, 116	95, 517	--------
Do	4	E	30–20–37	1, 246	1, 875	--------
Atlantic Refining Co.:						
Coleman	1	C	17–21–36	1, 540	1, 276	--------
Houston	1	B	7–21–36	1, 567	692	--------
Do	2	E	7–21–36	1, 582	711	--------
State B	1	J	8–21–36	1, 504	17, 226	--------

Gas-oil ratio and water report—Continued

EUNICE FIELD, DECEMBER 1938—Continued

Company, Lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Atlantic Refining Co—Continued.						
State	2	I	8-21-36	1, 528	13, 795	67
State C	1	W	5-21-36	1, 532	10, 303	--------
State	2	X	5-21-36	1, 530	8, 848	--------
State D	1	J	20-21-36	1, 540	2, 102	--------
State E	1	S	5-21-36	1, 495	6, 485	--------
State	2	T	5-21-36	1, 483	12, 991	--------
State G	1	V	5-21-36	1, 621	3, 468	49
State	2	U	5-21-36	1, 618	6, 063	--------
State H	1	O	5-21-36	1, 666	3, 183	--------
State	2	U	5-21-36	1, 620	3, 895	--------
Do	3	J	5-21-36	1, 664	2, 744	--------
Do	4	I	5-21-36	1, 627	3, 750	--------
State J	1	H	29-21-36	1, 717	367	--------
State K	1	V	6-21-36	1, 617	627	--------
State	2	S	6-21-36	1, 643	681	192
State L	1	E	11-21-36	1, 527	2, 592	--------
State	2	F	11-21-36	1, 537	1, 357	164
Do	3	E	11-21-36	1, 562	1, 491	--------
Do	4	D	11-21-36	2, 580	1, 628	--------
Do	5	D	3-21-36	1, 569	1, 573	--------
State M	1	I	36-20-36	1, 536	2, 212	--------
Do	2	J	36-20-36	1, 545	2, 544	--------
State O	1	E	32-20-37	1, 060	74, 273	--------
State	2	D	32-20-37	1, 075	36, 570	331
State P	1	E	25-20-36	1, 534	1, 245	--------
State	2	C	25-20-36	1, 562	896	--------
Cities Service Oil Co.:						
Felton	1	C	28-21-36	425	23, 500	69
State C	1	L	16-21-36	1, 548	1, 095	--------
State	2	M	16-21-36	1, 535	4, 050	--------
Do	3	J	16-21-36	1, 538	5, 210	--------
Do	4	H	16-21-36	1, 536	2, 040	--------
State D	1	B	32-21-36	655	2, 060	159 GL
Do	2	G	32-21-36	691	23, 200	8, 790 GL
Do	3	A	32-21-36	946	10, 850	5, 280 GL
Do	4	H	32-21-36	569	2, 290	722 GL
State F	1	O	30-20-37	1, 536	3, 850	52
State	2	I	30-20-37	1, 528	6, 940	51
State G	1	H	2-21-36	1, 531	2, 270	--------
State	2	V	2-21-36	1, 524	2, 640	33
Continental Oil Co.:						
Lockhart A	1	P	18-21-36	1, 544	3, 816	210
Lockhart	2	O	18-21-36	1, 540	4, 112	271
Do	3	K	18-21-36	1, 531	3, 708	412
Do	4	M	18-21-36	1, 532	5, 191	106
Do	5	N	18-21-36	1, 538	400	661 GL
Lockhart A	1	N	30-21-36	146	400	106 GL
Lockhart	2	A	30-21-36	402	400	416 GL
Do	3	B	30-21-36	892	400	1, 430 GL
Do	4	G	30-21-36	1, 180	400	3, 008 GL
Do	5	K	30-21-36	483	1, 538	93
Do	6	F	30-21-36	257	216	255 P
Lockhart B	1	D	13-21-36	1, 671	1, 051	--------
Do	1	E	14-21-36	1, 702	2, 826	--------
Lockhart	2	D	14-21-36	1, 697	2, 549	--------
Do	3	B	14-21-36	1, 604	3, 928	--------
Do	4	H	14-21-36	1, 633	4, 186	--------
Do	5	L	14-21-36	1, 677	2, 541	531
Do	6	M	14-21-36	1, 644	2, 827	433
Lockhart B	1	D	28-21-36	1, 545	1, 423	--------
Lockhart	2	E	28-21-36	1, 529	1, 430	54
Do	3	L	28-21-36	1, 525	1, 376	--------
Do	4	M	28-21-36	1, 242	400	124 GL
Lockhart B	2	N	31-21-36	933	8, 921	--------
Lockhart	4	P	31-21-36	1, 105	811	--------
Meyer A	1	N	17-21-36	1, 536	962	--------
Meyer	2	F	17-21-36	1, 533	2, 921	55
Do	3	E	17-21-36	1, 538	2, 709	--------
Do	4	K	17-21-36	1, 530	400	73 GL
Do	6	L	17-21-36	1, 541	1, 992	--------
Meyer A	1	A	18-21-36	1, 516	2, 175	--------
Do	2	J	18-21-36	1, 502	2, 069	730
Do	3	K	18-21-36	1, 494	1, 763	--------
Do	4	G	18-21-36	1, 501	2, 281	732
Do	5	H	18-21-36	1, 499	2, 986	--------
Do	6	B	18-21-36	1, 496	1, 674	1, 794
Meyer B	1	F	18-21-36	1, 783	1, 364	750

Gas-oil ratio and water report—Continued

EUNICE FIELD, DECEMBER 1938—Continued

Company, Lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Continental Oil Co—Continued.						
Meyer	2	O	18-21-36	1,779	1,178	2,186
Do	3	D	18-21-36	1,797	1,726	186
Do	4	E	18-21-36	1,875	1,389	--------
Meyer A	1	K	8-21-36	1,529	3,076	--------
Meyer	2	N	8-21-36	1,533	1,328	--------
Do	3	I	8-21-36	1,536	3,397	--------
Do	4	L	8-21-36	1,537	2,934	--------
Meyer B	1	F	8-21-36	1,537	4,898	34
Meyer	2	O	8-21-36	1,539	4,518	34
Do	3	E	8-21-36	1,540	7,512	34
Do	4	D	8-21-36	1,534	14,201	34
Meyer B	1	D	9-21-36	1,535	4,026	--------
Meyer	2	F	9-21-36	1,531	4,879	--------
Do	3	M	9-21-36	1,536	4,864	--------
Do	4	C	9-21-36	1,528	4,837	--------
Meyer B	1	V	4-21-36	1,540	3,128	--------
Meyer	2	W	4-21-36	1,517	3,416	--------
Do	3	P	4-21-36	1,551	2,987	--------
Do	4	S	4-21-36	1,562	2,111	--------
Do	5	Q	4-21-36	1,534	3,145	--------
Do	6	N	4-21-36	1,546	2,889	--------
Do	7	R	4-21-36	1,537	2,601	--------
Do	8	O	4-21-36	1,541	2,592	--------
Do	9	K	4-21-36	1,526	2,591	--------
Meyer B	10	I	4-21-36	1,529	3,253	--------
Meyer	11	K	4-21-36	1,526	2,628	--------
Do	12	F	4-21-36	1,528	1,416	--------
Do	13	J	4-21-36	1,519	3,245	284
Do	14	G	4-21-36	1,524	2,649	124
Do	15	C	4-21-36	1,524	2,668	--------
Do	16	H	4-21-36	1,519	2,507	--------
Do	17	A	4-21-36	1,538	1,533	--------
Do	18	B	4-21-36	1,526	3,646	--------
Meyer B	1	I	17-21-36	1,532	2,482	--------
Meyer	2	P	17-21-36	1,534	2,386	--------
Reed B	2	H	23-20-36	1,526	1,517	--------
Reed		P	23-20-26	1,531	2,291	--------
Do	5	I	23-20-36	1,531	3,989	--------
Do	6	O	23-20-36	1,530	1,045	--------
Do	7	G	23-20-36	1,533	711	--------
Reed B	1	H	24-20-36	1,534	13,976	--------
Reed	2	K	24-20-36	1,533	5,213	--------
Do	3	M	24-20-36	1,533	13,502	--------
Do	4	L	24-20-36	1,533	8,869	--------
State C	1	D	20-21-36	1,518	1,191	--------
State	2	E	20-21-36	1,526	1,136	227
Do	3	F	20-21-36	1,525	821	--------
Do	4	N	20-21-36	1,691	593	--------
Do	5	M	20-21-36	1,697	1,021	--------
Do	6	C	20-21-36	1,521	829	--------
Do	7	K	20-21-36	1,699	813	--------
Do	8	L	20-21-36	1,690	831	--------
State D	1	L	15-21-36	1,738	2,432	--------
State	2	B	15-21-36	1,659	2,286	--------
Do	3	A	15-21-36	1,647	2,351	--------
Do	4	O	15-21-36	1,708	2,402	394
Do	5	G	15-21-36	1,651	2,318	--------
Do	6	I	15-21-36	1,683	2,635	--------
Do	7	J	15-21-36	1,690	2,631	--------
Do	1	L	11-21-36	1,700	2,118	--------
Do	2	M	11-21-36	1,682	2,461	--------
Do	3	N	11-21-36	1,683	2,412	--------
Do	4	K	11-21-36	1,695	2,398	--------
State F	2	J	1-21-36	712	7,258	--------
Devonian Oil Co.:						
St. Heasley	1	B	5-21-36	1,598	6,294	--------
Do	2	F	5-21-36	1,431	2,345	--------
Do	3	A	5-21-36	1,432	1,559	--------
Do	4	E	5-21-36	1,598	1,785	--------
Do	5	D	5-21-36	1,598	6,206	--------
Do	6	C	5-21-36	1,598	5,336	--------
Elliott, L. E.:						
Elliott	1	I	26-20-36	799	----------	--------
Do	2	J	26-20-36	799	----------	--------
Fields:						
Turner State	1	G	32-20-37	499	1,127	-------- GL
Do	2	C	32-20-37	417	1,349	-------- GL
Do	3	F	32-20-37	62	4,323	--------

Gas-oil ratio and water report—Continued

EUNICE FIELD, DECEMBER 1938—Continued

Company, Lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Getty Oil Co.:						
State A	1	A	19–21–36	1,528	1,143	--------
State B	1	I	16–21–36	1,536	481	--------
State C	1	H	16–21–36	1,529	809	--------
State D	1	N	32–20–37	200	2,110	-------- P
Gulf Oil Corporation:						
Bell, R. R	1	O	8–21–36	1,467	2,293	54
Bell	2	P	8–21–36	1,600	9,936	--------
Bell B	1	X	6–21–36	2,094	5,702	--------
Bell	2	O	6–21–36	1,640	52,434	--------
Bell C	1	D	15–21–36	1,576	3,949	130
Bell	2	E	15–21–36	1,576	4,174	--------
Do	3	O	15–21–36	1,506	4,175	--------
Do	4	F	15–21–36	1,512	3,949	--------
Bell D	1	D	6–21–36	1,703	500	--------
Bell	2	U	6–21–36	1,702	894	--------
Bell E	1	D	11–21–36	1,696	2,371	--------
Bell	2	C	11–21–36	1,700	2,560	--------
Bell F	1	N	36–20–36	1,464	2,171	--------
Bell	2	K	36–20–36	1,469	1,888	--------
Do	3	F	36–20–36	1,469	1,888	--------
Do	4	C	36–20–36	1,474	2,078	--------
Do	5	M	36–20–36	1,475	2,077	--------
Do	6	L	36–20–36	1,485	1,794	--------
Do	7	E	36–20–36	1,486	1,605	--------
Do	8	D	36–20–36	1,477	2,737	--------
Butler	1	O	19–20–37	1,382	1,190	53
Campbell	1	N	7–21–36	244	3,130	34
Do	2	K	7–21–36	1,911	4,546	--------
Do	3	M	7–21–36	1,209	4,600	189
Do	4	I	7–21–36	1,772	6,510	--------
Collins	1	F	14–21–36	1,610	9,644	--------
Do	2	O	14–21–36	1,566	25,158	--------
Do	3	G	14–21–36	1,541	5,598	--------
Do	4	K	14–21–36	437	2,357	30
Felton	1	P	28–21–36	1,536	7,868	--------
Graham St. E	1	W	6–21–36	1,777	6,333	--------
Graham St	2	J	6–21–36	1,259	58,094	--------
Houston	1	P	7–21–36	1,626	2,700	--------
Do	2	I	7–21–36	1,629	35,371	--------
Do	3	O	7–21–36	1,914	2,792	208
Do	4	M	7–21–36	1,632	2,513	--------
Janda	1	P	20–21–36	1,681	507	--------
Do	2	I	20–21–36	1,695	580	--------
Janda B	1	J	32–21–36	1,525	6,200	3,802 GL
Janda C	1	L	15–21–36	1,682	1,558	--------
Janda	2	M	15–21–36	1,687	1,558	--------
Do	3	N	15–21–36	1,683	1,765	--------
Do	4	K	15–21–36	1,684	1,765	--------
Janda D	1	M	2–21–36	880	13,099	--------
Leck	1	B	14–21–36	1,542	37,893	--------
Leonard St	1	L	22-21–36	1,683	1,627	163
Do	2	K	22–21–36	1,687	1,424	202
Do	3	B	22–21–36	1,781	1,220	3,265 P
Do	4	G	22–21–36	1,663	2,034	13,750
Do	5	A	22–21–36	1,652	1,831	166
Orcutt	1	N	5–21–36	1,531	3,830	--------
Do	2	M	5–21–36	1,532	3,308	--------
Do	3	K	5–21–36	1,537	30,466	--------
Do	4	P	5–21–36	1,542	2,960	--------
Do	5	L	5–21–36	1,539	3,134	--------
Do	6	O	6–21–36	1,536	3,830	--------
Orcutt B	1	G	5–21–36	1,537	33,446	--------
Do	2	H	5–21–36	1,546	4,014	--------
Orcutt C	1	H	6–21–36	1,811	6,361	--------
Orcutt	2	A	7–21–36	1,687	3,090	--------
Do	3	G	7–21–36	1,690	11,269	--------
Do	4	F	6–21-36	1,711	2,545	--------
Do	5	F	36–20–36	1,715	1,824	--------
Do	6	C	36–20–36	1,682	2,181	--------
Do	7	M	36–20–36	1,726	1,642	--------
Do	8	B	6–21–36	1,699	1,999	--------
Ramsey, W. A	2	M	27–21–36	1,517	2,700	323
Ramsey	3	O	35–21–36	1,711	2,400	--------
Ramsey, Arn. C	1	M	21–21–36	1,688	766	--------
Ramsey	2	D	21–21–36	1,799	766	--------
Do	3	L	21–21–36	1,751	1,024	1,012
Do	4	E	21–21–36	1,690	689	--------
Do	5	N	21–21–36	1,650	1,179	4,090

Gas-oil ratio and water report—Continued

EUNICE FIELD, DECEMBER 1938—Continued

Company, Lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Gulf Oil Corporation—Continued.						
Ramsey	6	C	21-21-36	1,624	674	--------
Do	7	B	21-21-36	1,747	759	--------
Do	8	O	21-21-36	1,607	843	293
Do	9	A	21-21-36	1,669	758	--------
Do	10	G	21-21-36	1,758	674	--------
Do	11	I	21-21-36	1,639	758	--------
Do	12	J	21-21-36	1,757	674	488
Do	13	F	21-21-36	1,636	759	--------
Do	14	K	21-21-36	1,696	758	--------
Ramsey D	1	D	33-21-36	1,397	4,200	4,857 GL
Ramsey	2	A	33-21-36	1,669	3,600	4,670 GL
Ramsey, Bell	1	L	9-21-36	1,199	1,918	--------
Ramsey	2	E	9-21-36	1,629	8,714	--------
Do	3	M	9-21-36	1,601	2,441	--------
Do	4	D	9-21-36	1,600	1,743	--------
Do	5	U	4-21-36	1,646	1,803	37
Do	6	T	4-21-36	1,469	2,521	--------
Do	7	M	4-21-36	1,577	2,611	62
Do	8	L	4-21-36	1,511	10,804	--------
Do	9	E	4-21-36	1,578	2,431	51
Do	10	D	4-21-36	1,560	2,521	42
Ramsey B	1	M	29-20-37	103	3,333	-------- P
Do	2	M	33-20-37	710	5,769	--------
Reeves	1	L	29-20-37	560	161	-------- P
Do	2	E	29-20-37	112	429	-------- P
Sunshine	1	M	30-20-37	1,464	22,507	--------
Do	2	N	30-20-37	1,462	38,893	--------
Do	3	K	30-20-37	1,462	1,700	--------
White	1	P	25-20-36	1,514	5,507	--------
Do	2	I	25-20-36	1,526	4,406	--------
Do	3	H	25-20-36	1,530	5,386	--------
Do	4	O	25-20-36	1,674	1,500	611
Do	5	A	25-20-36	1,525	4,406	--------
Do	6	J	25-20-36	1,396	2,908	--------
White B	1	P	35-20-36	619	37.970	27
Humble Oil & Refining Co.:						
Adkins	1	D	10-21-36	1,529	837	--------
Do	2	M	10-21-36	1,539	753	--------
Do	3	K	10-21-36	1,539	957	250--
Do	4	L	10-21-36	1,529	878	--------
Do	5	N	10-21-36	1,539	781	--------
Do	6	D	10-21-36	1,529	710	--------
Do	7	F	10-21-36	1,529	834	--------
Fopeano	1	N	25-20-36	1,300	1,243	--------
Do	2	H	35-20-36	295	2,553	52--
Do	3	M	25-20-36	1,300	3,762	--------
Do	4	P	26-20-36	1,300	4,327	--------
Do	5	O	26-20-36	295	1,667	--------
Do	6	P	26-20-36	435	55,520	--------
Knox	1	J	26-20-36	1,533	4,775	--------
Do	2	O	26-20-36	1,533	5,117	--------
Do	3	H	26-20-36	1,535	2,235	--------
Do	4	B	26-20-36	1,535	2,855	--------
Do	5	P	26-20-36	1,533	5,833	--------
Do	6	I	26-20-36	1,533	2,031	--------
Do	7	G	26-20-36	1,535	2,471	--------
Do	8	A	26-20-36	1,535	1,997	6--
St. Aggies	1	P	31-20-37	1,211	2,180	--------
Do	2	M	31-20-37	1,211	2,444	--------
Do	3	D	31-20-37	1,374	1,510	--------
Do	4	F	31-20-37	1,374	1,156	--------
Do	5	K	31-20-37	1,211	2,514	--------
Do	6	G	31-20-37	1,339	2,048	--------
Do	7	B	31-20-37	1,339	1,761	--------
Do	8	C	31-20-37	1,374	2,575	--------
Do	9	E	31-20-37	1,374	1,904	--------
Do	10	L	31-20-37	1,211	3,142	--------
Do	11	A	31-20-37	1,339	1,577	--------
Do	12	H	31-20-37	1,339	1,728	--------
State B	1	E	29-21-36	1,497	24,470	2,652
State	2	F	29-21-36	1,583	2.193	81
Do	3	J	29-21-36	1,526	1,359	1,534 GL
Do	4	B	29-21-36	1,583	1,988	32
Do	5	G	29-21-36	1,497	1,961	1,705 GL
Do	6	O	29-21-36	1,497	2,148	4,602 GL
Do	7	I	29-21-36	1,583	1,754	81
Do	8	P	29-21-36	1,497	2,883	1,534
Do	9	K	29-21-36	1,497	1,879	1,002
State C	1	A	29-21-36	1,540	1,355	--------
State G	1	D	23-21-36	226	3,734	64 P

Gas-oil ratio and water report—Continued

EUNICE FIELD, DECEMBER 1938—Continued

Company, Lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Landreth Production Corporation:						
State D	1	D	22-21-36	1, 706	1, 091	7 GL
State	2	O	22-21-36	1, 706	1, 091	7 GL
State E	1	E	22-21-36	1, 694	438	7 GL
Midcontinent Petroleum Corporation:						
Marshall	1	P	11-21-36	1, 620	--------	--------
Do	2	I	11-21-36	1, 620	--------	--------
Do	3	M	12-21-36	1, 658	--------	--------
Reeves	1	D	29-20-37	1, 111	29, 846	--------
Murray, et al.						
State	1	N	3-21-36	1, 516	660	--------
Do	2	L	3-21-36	1, 534	1, 320	--------
Do	3	M	3-21-36	1, 145	--------	--------
Do	4	E	3-21-36	1, 518	--------	--------
Phillips Petroleum Co.:						
Edna State	1	D	30-20-37	1, 278	6, 096	--------
Hudson	1	B	30-20-37	1, 156	1, 960	355 GL
Mex	1	A	30-20-37	516	7, 511	--------
New	1	A	26-20-36	1, 330	162	--------
Do	2	I	26-20-36	1, 330	1, 483	--------
Quapaw	1	P	19-20-37	757	5, 325	34
Repollo Oil Co.:						
Adkins	1	E	9-21-36	1, 534	3, 510	--------
Do	2	M	9-21-36	1, 526	6, 900	--------
Do	3	O	9-21-36	1, 534	3, 562	--------
Do	4	B	9-21-36	1, 534	5, 002	--------
Do	5	M	9-21-36	1, 534	894	--------
Do	6	P	9-21-36	1, 534	3, 770	--------
Do	7	I	9-21-36	1, 534	2, 611	--------
Do	8	A	9-21-36	1, 534	3, 970	--------
Berryman	1	O	11-21-36	1, 522	3, 672	--------
Brownlee	1	M	25-21-36	666	2, 520	2, 610
Houston	1	C	7-21-36	1, 541	880	--------
Do	2	F	7-21-36	1, 542	899	--------
Roach	3	E	21-20-37	1, 534	1, 182	--------
State "176"	1	B	19-20-36	1, 534	5, 112	--------
State	2	O	19-20-36	843	830	982
Do	4	G	19-20-36	1, 534	4, 616	4, 602
Do	5	D	19-20-36	1, 534	4, 301	170
Do	6	C	19-20-36	1, 528	4, 450	133
Do	7	F	19-20-36	1, 534	3, 220	--------
State "193"	1	M	30-20-37	1, 516	5, 091	--------
State "196"	1	M	32-20-37	1, 534	18, 243	--------
State	2	L	32-20-37	1, 403	5, 184	1, 326
White	1	P	24-20-36	1, 534	1, 216	--------
Do	2	I	24-20-36	1, 553	1, 050	--------
White, Ida A	1	I	35-20-36	1, 534	3, 327	--------
Republic Prod. Co.:						
State	1	P	12-21-35	1, 023	4, 714	--------
Rush, J. M.:						
State A	1	I	20-20-37	1, 541	575	45
State	2	J	20-20-37	1, 455	605	160
Shell Petroleum Corporation:						
Coleman	1	J	17-21-36	1, 536	3, 000	279
Do	2	O	17-21-36	1, 535	2, 800	93
Devonian	1	G	20-21-36	1, 535	1, 810	31
Do	2	P	20-21-36	1, 527	1, 593	31
Do	3	A	20-21-36	1, 527	525	--------
Do	4	N	20-21-36	1, 528	544	--------
State A	1	H	12-21-35	603	--------	93 P
State	2	A	12-21-35	504	21, 400	62
State B	1	D	29-21-36	1. 533	130	372
State C	1	A	24-21-36	1, 685	2, 150	155
State	2	H	24-21-36	1, 685	2, 025	--------
State E	1	I	6-21-36	1, 700	3, 010	93
Do	2	J	6-21-36	1, 697	1, 999	--------
State F	1	N	6-21-36	1, 742	1, 055	--------
State	2	M	6-21-36	1. 743	785	124
State G	1	K	6-21-36	3, 085	1, 900	--------
State	2	L	6-21-36	3, 082	1, 248	62
State H	1	P	13-21-35	1, 603	6. 630	310
State	2	A	13-21-35	1. 719	209	--------
Do	3	H	13-21-35	1. 719	316	--------
Do	4	I	13-21-35	1, 601	2, 100	--------
State J	1	N	32-20-37	482	12, 000	--------
State	2	O	32-20-37	483	33, 000	31
Do	3	P	32-20-37	589	1, 500	--------
State K	1	H	36-20-36	1, 461	5, 040	--------

Gas-oil ratio and water report—Continued

EUNICE FIELD, DECEMBER 1938—Continued

Company, Lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Shell Petroleum Corporation—Con.						
State	2	H	36-20-36	1,461	4,420	--------
Do	3	G	36-20-26	1,461	3,840	--------
Do	4	B	36-20-36	1,461	5,610	--------
State L	1	O	1-21-35	1,447	19,900	--------
State	2	K	1-21-35	1,444	39,400	62
State M	1	H	1-21-35	1,622	1,621	--------
State	2	I	1-21-35	1,693	1,824	--------
Do	3	A	1-21-35	1,618	1,800	--------
Do	4	P	1-21-35	1,692	2,090	248
State N	1	I	24-21-35	797	10,400	--------
Skelly Oil Co.:						
Adkins	1	O	10-21-36	1,537	558	--------
Akens	1	M	3-20-36	1,557	582	--------
Coleman	1	D	17-21-36	1,533	1,517	--------
State B	1	D	16-21-36	1,523	3,013	--------
State	2	E	16-21-36	1,536	3,013	--------
Do	3	C	16-21-36	1,534	3,013	--------
Do	4	B	16-21-36	1,530	3,005	--------
Do	5	G	16-21-36	1,531	3,005	--------
Do	6	F	16-21-36	1,535	3,013	--------
State C	1	C	29-21-36	1,536	194	--------
State G	1	J	30-20-37	1,485	1,937	--------
State H	1	E	25-20-36	1,465	1,377	--------
State	2	D	25-20-36	1,526	1,377	--------
Standard Oil Co. of Texas:						
Meredith	1	N	19-21-36	1,623	700	--------
Do	2	P	19-21-36	2,755	1,500	10,433
Do	3	I	19-21-36		680	274
State "2"	1	O	20-21-36	1,540	1,270	--------
Stanolind Oil & Gas Co.:						
Gilluly A	3	G	25-20-36	1,542	9,288	--------
Do	5	B	25-20-36	1,542	2,474	--------
Do	6	K	25-20-36	1,726	1,004	--------
Do	7	O	25-20-36	1,554	15,435	--------
Do	8	J	24-20-36	1.554	937	--------
Do	10	H	24-20-36	1,481	8,975	--------
Do	11	G	24-20-36	1,481	7,080	--------
Do	13	F	24-20-36	1,543	7,488	--------
Do	14	E	24-20-36	1,542	783	--------
Gilluly B	1	L	25-20-36	449	208	--------
Gilluly	3	N	33-20-37	807	500	-------- P
McQuatters	1	A	11-21-36	1,538	200	-------- P
Do	2	B	11-21-36	1,537	1,465	--------
State C "11"	1	X	2-21-36	194	----------	-------- P
State	2	W	2-21-36	193	----------	-------- P
Sun Oil Co.:						
Akens	1	T	3-21-36	1,533	903	380
Do	2	N	3-21-36	1,504	364	--------
Do	3	O	3-21-36	1,536	2,080	--------
Do	4	I	3-21-36	1,532	412	15
Do	5	X	3-21-36	1,536	3,240	--------
Do	6	O	3-21-36	587	1,475	--------
The Texas Co.:						
Aggies H	1	P	31-20-37	1,532	2,015	--------
Aggies	2	M	31-20-37	1,552	2,958	291
Do	4	N	31-20-37	1,528	3,016	--------
Do	5	I	31-20-37	1,532	1,642	--------
Rector	1	I	30-21-36	1,441	4,766	14,322
Do	2	P	30-21-36	1,437	848	11,642 P
Do	3	G	30-21-36	1,427	2,102	18,125
Do	4	O	31-21-36	1,425	975	302
St. H Lieu	8	N	20-20-37	1,548	1,043	--------
Do	9	M	19-20-37	1,546	1,120	--------
Do	12	H	20-20-37	1,688	4,300	710
Do	13	M	19-20-37	1,540	1,232	--------
Do	14	N	19-20-37	1,487	1,382	--------
Do	15	O	20-20-37	1,555	951	--------
Tidewater Association Oil Co.:						
Coleman	1	G	17-21-36	1,529	1,793	36
Do	2	B	17-21-36	1,537	1,228	--------
Do	3	A	17-21-36	1,551	1,783	36
Do	4	H	17-21-36	1,530	4,204	--------
Marshall	1	G	13-21-36	80	1,881	2
State D	1	J	16-21-36	1,540	1,032	--------
State	2	O	16-21-36	1,538	550	--------
State E	1	I	16-21-36	1,538	550	--------
State	2	P	16-21-36	1,544	587	--------

Gas-oil ratio and water report—Continued

EUNICE FIELD, DECEMBER 1938—Continued

Company, Lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Tidewater Association Oil Co.—Con.						
St. Foster	1	C	8-21-36	1,536	1,973	48
Do	2	H	8-21-36	1,545	1,112	
Do	3	B	8-21-36	1,540	905	32
Do	4	A	8-21-36	1,532	1,615	85
St. Foster G	1	H	21-21-36	1,541	476	113
Two States Oil Co.:						
Atha	1	M	31-21-36	1,529	15,589	16%
McQuatters	1	N	11-21-36	1,717	1,405	
Do	2	J	11-21-36	1,717	1,405	
Do	3	G	11-21-36	1,717	1,405	
State	1	E	11-21-36	1,707	1,884	
W. K. Royalty Co.:						
State	1	R	5-21-36	1,306		
Do	2	O	5-21-36	1,300		

SAND AREAS, REMEDIAL WORK, JANUARY 1939

Gulf McCormick, No. 4, section 32-21-37.—Prior to February 2 this well was producing 45 barrels oil with 171,000 cubic feet of gas. On that date it was treated with 2,000 gallons acid solution after which it tested 90 barrels in 24 hours with 572,000 cubic feet of gas.

Gulf Stuart, No. 3, section 10-25-37.—Prior to work-over this well was flowing 32 barrels of oil per day with 80,000 cubic feet of gas. On January 27 the well was shot between the depths of 3,422 feet and 3,361 feet with 120 quarts of solidified nitroglycerine. On February 5 following the clean-out job with cable tools, the well flowed 160 barrels of oil and 432,000 cubic feet of gas in 24 hours through open 2-inch tubing.

Sand areas, completion reports, January 1939

	Casing and tubing record	Sax cement
Company, Parker:		
Lease: Erwin A-3	Size, 12½; depth, 177	100
Location: 35-24-37	Size, 8⅝; depth, 1,298	100
Elevation: 3,183	Size, 7; depth, 3,200	250
Total depth, 3,460	Tubing size, 2; tubing depth, 3,370	
Completion date: Jan. 10, 1939	Packer depth; 3,362	
Initial production test	Test after acid or shot, 25/6 hr	
Company, Twin:		
Lease: Xmas C-1	Size, 8⅝; depth, 1,132	500
Location: 17-22-37	Size, 7; depth, 3,485	100
Elevation: 3,391	Size, —; depth, —	
Total depth: 3,699	Tubing size, 2⅜; tubing depth, 3,694	
Completion date: ——	Packer depth, —	
Initial production test: 22/day	Test after acid or shot, 67/day	
Company, Gulf:		
Lease: Cole B-3	Size, 8⅝; depth, 315	200
Location: 16-22-37	Size, 5; depth, 3,548	220
Elevation: 3,414	Size, —; depth, —	
Total depth: 3,700	Tubing size, 2; tubing depth, 3,670	
Completion date: Jan. 23, 1939	Packer depth, —	
Initial production test	Test after acid or shot, 126/7 hr	
Company, Phillips:		
Lease: Woolworth No. 4	Size, 9⅝; depth, 308	200
Location: 33-24-37	Size, 7: depth, 3,336	400
Elevation: 3,219	Size, —; depth, —	
Total depth: 3,491	Tubing size, 2; tubing depth, 3,473	
Completion date: Jan. 20, 1939	Packer depth, —	
Initial production test: 180/3 hour	Test after acid or shot, —	
Company, Getty:		
Lease: State G-1	Size, 16; depth, 116	100
Location: 2-25-37	Size, 8⅝; depth, 1,268	100
Elevation: 3,184	Size, 7; depth, 3,344	250
Total depth: 3,502	Tubing size, 2; tubing depth, 3,435	
Completion date: Jan. 23, 1939	Packer depth, —	
Initial production test	Test after acid or shot, 96/day	

Sand areas, completion reports, January 1939—Continued

	Casing and tubing record	Sax cement
Company, Sunray:		
Lease: Henry No. 2	Size, 12½; depth, 132	125
Location: 26-25-37	Size, 8⅝; depth, 1,218	100
Elevation: 3,023	Size, 7; depth, 3,213	150
Total depth: 3,297	Tubing size, 2; tubing depth, 3,275	
Completion date: Jan. 26, 1939	Packer depth, —	
Initial production test: 81/day	Test after acid or shot, 160/day	
Company, Italo:		
Lease: Carlson A-1	Size, 13; depth, 134	100
Location: 23-25-37	Size, 9⅝; depth, 1,149	300
Elevation: 3,066	Size, 7; depth, 3,210	300
Total depth: 3,345	Tubing size, 2; tubing depth, 3,314	
Completion date: Jan. 10, 1939	Packer depth, —	
Initial production test: 80/day	Test after acid or shot, 10/hr	
Company, J. M. Rush:		
Lease: Weatherly No. 1	Size, 10¾; depth, 260	200
Location: 21-21-37	Size, 5½; depth, 3,503	800
Elevation: 3,486	Size, —; depth, —	
Total depth: 3,790	Tubing size, 2; tubing depth, 3,775	
Completion date: Jan. 4, 1939	Packer depth, —	
Initial production test	Test after acid or shot, 60/14 hr	
Company, Montecito:		
Lease: Woolworth No. 1	Size, 20; depth, 40	25
Location, 33-24-37	Size, 9⅝; depth, 1,400	500
Elevation: 3,248	Size, 7; depth, 3,360	275
Total depth: 3,545	Tubing size, 2; tubing depth, 3,500	
Completion date: Jan. 1, 1939	Packer depth, —	
Initial production test	Test after acid or shot, —	
Company, Olean:		
Lease, Brunson, R. L	Size, 10¾; depth, 153	65
Location: 4-22-37	Size, 8⅝; depth, 1,178	150
Elevation: 3,440	Size, 5½; depth, 3,605	250
Total depth: 3,742	Tubing size, 2; tubing depth, 3,721	
Completion date: Jan. 10, 1939	Packer depth, —	
Initial production test: 10/hour	Test after acid or shot	
Company, Repollo:		
Lease: State "157" C-1	Size, 9⅝; depth, 1,240	500
Location: 32-24-37	Size, 7; depth, 3,430	250
Elevation: 3,265	Size, —; depth, —	
Total depth: 3,545	Tubing size, 2; tubing depth, 3,522	
Completion date: Jan. 7, 1939	Packer depth, —	
Initial production test: 96/8 hour	Test after acid or shot, —	
Company, Clower:		
Lease: Manda B-1	Size, 15½; depth, 105	100
Location: 28-22-37	Size, 7; depth, 3,415	150
Elevation: 3,354	Size, —; depth, —	
Total depth: 3,681	Tubing size, 2; tubing depth, 3,660	
Completion date: Dec. 28, 1939	Packer depth, —	
Initial production test: 40/day	Test after acid or shot, 120/day	
Company, Gulf:		
Lease: Stuart No. 5	Size, 10¾; depth; 256	250
Location: 10-25-37	Size, 7; depth, 3,324	300
Elevation: 3,132	Size, —; depth, —	
Total depth: 3,435	Tubing size, —; tubing depth, —	
Completion date: Jan. 9, 1939	Packer depth, —	
Initial production test: 96/24 hour	Test after acid or shot, 72/6 hour	
Company, Ohio:		
Lease: Saunders No. 1	Size, 10; depth, 292	250
Location: 1-22-36	Size, 7⅝; depth, 1,196	400
Elevation: 3,453	Size, 5½; depth, 3,700	200
Total depth: 3,830	Tubing size, 2½; tubing depth, 3,805	
Completion date: Jan. 10, 1939	Packer depth, —	
Initial production test: 39/hour	Test after acid or shot, —	
Company, Twin:		
Lease: State D No. 1	Size, 8⅝; depth, 1,619	600
Location: 30-17-35	Size, 5½; depth, 4,232	275
Elevation, 3,991	Size, —; depth, —	
Total depth: 4,700	Tubing size, 2⅜; tubing depth, 4,665	
Completion date: ——	Packer depth, —	
Initial production test	Test after acid or shot, 102/day	
Company, Continental:		
Lease: Lockhart B-1 No. 3	Size, 10¾; depth, 275	225
Location: 1-22-36	Size, 7⅝; depth, 1,151	425
Elevation: 3,502	Size, 5½; depth, 3,682	425
Total depth: 3,802	Tubing size, 2; tubing depth, 3,796	
Completion date: Jan. 1, 1939	Packer depth, —	
Initial production test	Test after acid or shot, 39/hr	
Company, Italo:		
Lease: Wells B-1	Size, 13; depth, 170	100
Location: 6-25-37	Size, 9⅝; depth, 1,216	300
Elevation: 3,234	Size, 7; depth, 3,377	300
Total depth: 3,519	Tubing size, 2; tubing depth, 3,480	
Completion date: Jan. 21, 1939	Packer depth, 17/hour	
Initial production test: 1/hour		

Gas-oil ratio and water report

SAND AREAS, DECEMBER 1938

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
HARDY AREA						
Amerada Petroleum Corporation: Hare	1	M	33-21-37	932	23, 012	--------
Barnsdall Oil Co.: Hardy	1	H	29-21-37	793	500	--------
Continental Oil Co.:						
Hawk	1	R	5-21-37	1, 053	1, 421	--------
Hawk B	1	S	6-21-37	95	718	--------
Lockhart A	1	I	17-21-37	399	1, 189	--------
State A	1	P	36-20-37	1, 573	1, 472	--------
State	2	I	36-20-37	----------	1, 333	--------
Getty Oi. Co.:						
Hardy	1	P	20-21-37	411	552	-------- P
Do	2	O	20-21-37	354	554	--------
Gulf Oil Corporation:						
Carson	1	L	28-21-37	688	2, 400	31 P
Hardy	1	M	20-21-37	214	5, 555	32
King	1	E	28-21-37	587	8, 888	92
Do	2	D	28-21-37	599	9, 166	61
Do	3	F	28-21-37	575	10, 555	92
Mattern B	1	I	30-21-37	1, 541	2, 000	--------
Mattern C	1	I	18-21-37	920	8, 484	--------
McCormick	1	A	32-21-37	1, 718	2, 800	--------
Do	2	B	32-21-37	1, 736	2, 600	--------
Do	3	P	32-21-37	1, 549	3, 436	--------
Do	4	O	32-21-37	1, 539	3, 627	--------
Do	5	G	32-21-37	1, 726	2, 400	--------
Do	6	J	32-21-37	1, 522	2, 600	--------
Hershbach Drilling Co.: Alexander	1	S	5-21-37	351	48, 000	--------
Magnolia Petroleum Co.:						
Carson	1	L	28-21-37	371	3, 740	-------- P
Do	2	D	33-21-37	1, 366	3, 495	--------
Do	3	M	28-21-37	388	3, 628	-------- P
Do	4	N	28-21-37	1, 797	2, 970	-------- P
Corrigan	1	O	33-21-37	1, 760	1, 918	--------
Do	2	P	33-21-37	1, 589	1, 735	--------
Hardy	2	D	29-21-37	1, 123	1, 370	8
Do	3	C	29-21-37	642	1, 280	2 P
Menke: J. P. Alexander	1	K	5-21-37	1, 204	----------	--------
Ohio Oil Co.:						
Hardy	1	I	20-21-37	411	680	--------
Turner	1	I	29-21-37	726	760	--------
Do	2	J	29-21-37	424	500	--------
Repollo Oil Co.:						
Turner, H. S	1	N	29-21-37	1, 612	2, 380	--------
Turner, H. W	1	L	29-21-37	900	2, 520	--------
Turner	2	K	29-21-37	1, 473	1, 940	--------
York	1	H	20-21-37	447	9, 000	47
Rush, J. M.:						
Wantz	1	M	21-21-37	453	2, 950	90
Do	2	L	21-21-37	599	2, 950	81
Skelly Oil Co.:						
Hill	1	G	6-21-37	1, 708	600	--------
Do	2	B	6-21-37	1, 707	755	--------
State K	1	G	32-21-37	1, 636	825	--------
Stanolind Oil & Gas Co.:						
Hill A	1	J	6-21-37	1, 696	1, 255	--------
Hill	2	I	6-21-37	1, 696	1, 108	--------
Do	3	N	6-21-37	1, 013	4, 320	--------
Hill B	1	H	6-21-37	918	534	10 P
Hill C	1	O	5-21-37	134	----------	-------- P
Hill	2	E	5-21-37	526	843	--------
Do	3	D	5-21-37	1, 595	1, 380	--------
Do	4	F	5-21-37	1, 595	2, 000	--------
Thompson	1	A	6-21-37	1, 685	1, 500	--------
Sun Oil Co.: Weatherly	1	N	17-21-37	351	2, 400	--------
The Texas Co.:						
Alexander	1	L	7-21-37	331	7, 260	71
Alexander, J. P	1	M	5-21-37	379	730	--------
Henderson	1	H	30-21-37	1, 161	3, 610	--------
Southern Petroleum Exploration Co., Inc.:						
Downes	1	N	32-21-37	1, 440	900	--------
Do	2	M	32-21-37	580	----------	-------- P
Do	3	H	32-21-37	1, 440	890	--------
Do	4	L	32-31-37	1, 440	990	--------
Twin Oil Corporation:						
Hare	1	N	33-21-37	2, 782	2, 000	--------
Do	2	L	33-21-37			
Joyce Pruitt	1	P	31-21-37	916	----------	-------- P
State	1	F	32-21-37	1, 768	2, 586	--------

Gas-oil ratio and water report—Continued

SAND AREAS, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
HARDY AREA—contniued						
Two States et al.:						
Hill A	1	M	31-20-38	1,610	759	--------
Hill	2	N	31-20-38	1,610	1,301	--------
Hill B	1	C	5-21-37	1,525	489	--------
SKAGGS AREA						
Continental Oil Co.:						
Burger	1	L	10-20-38	997	5,082	--------
S. Meyer B	1	L	31-20-38	1,532	1,026	--------
S. Meyer	2	K	31-20-38	--------	635	--------
Skaggs	1	L	24-20-37	928	--------	-------- P
Warren	1	F	30-20-38	772	--------	-------- P
SOUTH EUNICE AREA						
Cities Service Oil Co.:						
Closson	1	J	6-22-37	1,504	19,700	30
Do	2	I	6-22-37	1,544	1,900	48
Do	3	G	6-22-37	1,488	600	--------
Do	4	P	6-22-37	1,536	400	--------
Do	5	B	6-22-37	1,528	400	--------
Do	6	O	6-22-37	1,556	1,950	--------
Do	7	H	6-22-37	1,548	1,000	--------
Do	8	A	6-22-37	1,505	500	--------
Closson A	1	A	18-22-36	1,540	550	--------
Closson	2	H	18-22-36	1,412	560	--------
Do	3	I	18-22-36	1,670	600	--------
State H	1	A	17-22-36	1,529	1,650	298
Continental Oil Co.:						
Lockhart B	1	L	1-22-36	1,387	923	--------
Lockhart	2	F	1-22-36	1,390	815	--------
State E	1	E	16-22-36	664	4,516	--------
State	1	P	17-22-36	1,198	3,751	347
Do	2	I	17-22-36	1,004	1,209	--------
Do	3	D	17-22-36	1,044	7,877	160
State J	1	B	2-22-36	1,418	3,791	--------
State	2	I	2-22-36	1,388	764	--------
Gulf Oil Corporation:						
Day	1	K	6-22-36	1,409	6,000	--------
Do	2	F	6-22-36	1,688	2,500	--------
Do	3	N	6-22-36	1,543	25,000	--------
Do	4	E	6-22-36	1,487	18,000	--------
Greer	1	K	21-22-36	308	3,333	31
Mattern E	1	L	21-22-36	1,560	1,700	--------
Mattern	2	E	21-22-36	1,568	3,300	--------
Mattern F	1	B	21-22-36	1,539	2,000	--------
Mid-Continent Petroleum Corporation:						
Boren	1	A	20-22-36	493	3,852	26
Do	2	H	20-22-36	493	7,900	135
Greer	1	C	21-22-36	1,541	1,826	400
Do	2	D	21-22-36	1,541	3,416	678
Do	3	F	21-22-36	1,541	2,822	273
Do	4	E	21-22-36	1,541	2,789	145
Ohio Oil Co.:						
Maxwell	1	C	16-22-36	1,532	900	112
McDonald	1	L	15-22-36	1,555	1,020	149
Do	3	J	16-22-36	1,555	860	--------
Do	4	P	16-22-36	1,555	1,010	--------
Do	5	F	16-22-36	1,555	1,610	--------
Do	6	N	16-22-36	1,556	1,025	733
Do	7	O	16-22-36	1,556	928	570
Do	8	M	16-22-36	1,556	930	1,141
Do	9	L	16-22-36	1,556	1,015	53
Do	10	K	16-22-36	1,556	1,010	--------
Repollo Oil Co.:						
State "157"	1	O	9-22-36	--------	350	--------
State B	1	A	7-22-36	1,534	950	--------
State	2	F	7-22-36	1,537	1,130	--------
Shell Petroleum Corporation:						
Christmas	1	A	21-22-36	529	--------	31 P
Do	2	B	21-22-36	918	606	31
Sun Oil Co.: Record	1	D	22-22-36	516	30,400	90

Gas-oil ratio and water report—Continued

SAND AREAS, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
SOUTH EUNICE AREA—continued						
Texas Pacific Coal & Oil Co.:						
State A "2"	1	N	9-22-36	1,534	2,279	930
State	2	L	9-22-36	1,685	2,123	465
Do	3	G	8-22-36	1,685	2,537	248
Do	4	M	9-22-36	1,534	2,951	341
Do	5	A	7-22-36	1,685	4,552	--------
Do	6	B	7-22-36	1,685	3,895	--------
Do	7	D	8-22-36	1,685	1,606	--------
Do	8	P	7-22-36	1,685	1,731	--------
Do	9	G	7-22-36	1,685	4,358	--------
Do	10	M	8-22-36	1,685	1,731	--------
Do	11	H	7-22-36	1,685	1,937	--------
Do	12	I	7-22-36	1,685	2,179	465
Tidewater Associated Oil Co.:						
Day	1	O	6-22-36	663	5,983	--------
Do	2	D	6-22-36	858	6,342	60
LANGLIE AREA						
Amerada Petroleum Corporation:						
Stuart	1	D	14-25-37	1,632	809	--------
Do	2	E	14-25-37	1,652	1,120	--------
Stuart, F.	1	G	22-25-37	1,694	760	--------
Anderson Prichard Oil Corporation:						
Carlson	2	E	21-25-37	817	1,017	--------
Harrison	1	M	23-25-37	1,708	3,703	--------
Do	2	I	22-25-37	1,708	846	--------
Do	3	J	22-25-37	1,708	846	--------
Jal	1	A	8-25-37	1,707	3,558	--------
Do	2	B	8-25-37	1,695	829	--------
Langlie	1	P	8-25-37	1,720	1,555	--------
Do	2	I	8-25-37	1,744	1,037	--------
Do	3	H	8-25-37	1,694	1,556	--------
Do	4	G	8-25-37	1,724	830	--------
Lanehart	1	D	21-25-37	1,404	800	--------
Stuart	1	E	10-25-37	1,633	1,056	--------
Do	2	E	11-25-37	1,727	1,054	--------
Do	3	D	11-25-37	1,574	726	--------
Wells	1	P	5-25-37	1,709	831	--------
Do	2	O	5-25-37	1,709	831	--------
Do	3	C	5-25-37	1,556	778	--------
Do	4	D	5-25-37	1,556	778	--------
Culbertson et al.:						
Alston	1	D	26-25-37	1,701	----------	--------
Do	2	E	26-25-37	1,701	----------	--------
Do	3	D	27-25-37	1,701	----------	--------
Do	4	F	26-25-37	1,701	----------	--------
Dabbs	1	C	35-25-37	2,145	----------	--------
Do	2	D	35-25-37	1,825		--------
Henry	1	L	26-25-37	1,805	----------	--------
Humphrey A	1	D	3-25-37	1,666	----------	--------
Humphrey	2	C	3-25-37	1,666	----------	--------
Do	3	G	3-25-37	1,666	----------	--------
Do	4	F	3-25-37	1,666	----------	--------
Do	5	J	3-25-37	1,666	----------	--------
Do	6	O	3-25-37	1,666	----------	--------
Liberty Roy	1	D	3-25-37	1,698	----------	--------
Liberty	2	E	3-25-37	1,698	----------	--------
Do	3	L	3-25-37	1,698	----------	--------
Stuart	1	M	10-25-37	1,566	----------	--------
Do	2	P	10-25-37	1,567	----------	--------
Do	3	N	10-25-37	1,608	----------	--------
Eppenauer:						
Stuart	1	E	22-25-37	1,619	1,800	--------
Stuart Comm	1	A	22-25-37	1,643	900	--------
Gulf Oil Corporation:						
Elliott	1	P	15-25-37	1,495	3,600	--------
Do	2	I	15-25-37	1,565	3,000	--------
Shahan	1	B	33-25-37	1,028	5,517	3,740
Stuart	1	G	10-25-37	1,352	5,200	--------
Do	2	F	10-25-37	1,299	3,200	--------
Do	3	H	10-25-37	1,140	1,600	--------
Do	4	B	10-25-37	1,307	2,000	--------
Westfall	1	O	15-25-37	1,744	3,600	--------
Do	2	J	15-25-37	1,614	2,800	60
Hershbach Drilling Co., Burleson	1	C	8-25-37	1,711	850	--------

Gas-oil ratio and water report—Continued

SAND AREAS, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
LANGLIE AREA—continued						
Humble Oil & Refining Co.:						
Hadfield	1	J	21-25-37	1,599	3,281	--------
Lanehart	1	K	21-25-37	573	1,676	438 GL
Jal Natural Gas Co., Justis	1	H	20-25-37	1,653	----------	--------
King, Carl B. Drilling Co.:						
Stuart	1	N	11-25-37	1,645	----------	--------
Stuart A	1	C	14-25-37	1,708	----------	--------
Leonard:						
Justis	1	D	20-25-37	274	----------	--------
Lanehart	1	G	21-25-37	1,699	----------	--------
Do	2	F	21-25-37	1,717	----------	--------
Do	3	C	21-25-37	1,670	----------	--------
Do	4	B	21-25-37	1,808	----------	--------
Phillips-Pure, Woolworth "3"	1	M	6-25-37	146	22,295	216
Plains Prod. Co., Stuart	1	O	10-25-37	752	----------	--------
Repollo Oil Co.:						
Stuart A	1	J	10-25-37	1,536	1,620	--------
Stuart B	2	I	10-25-37	1,542	1,484	--------
Stuart C	3	K	10-25-37	1,093	2,111	--------
Stuart D	4	D	10-25-37	1,538	832	--------
Republic Prod. Co., Crosby	3	M	28-25-37	1,737	2,647	30,529
Skelly Oil Co.:						
State "1"	1	E	2-25-37	1,581	1,115	--------
Stuart	1	C	15-25-37	1,669	233	--------
Stanolind Oil & Gas Co.:						
Langlie A	1	M	9-25-37	1,019	4,173	33
Langlie	2	L	9-25-37	1,018	1,146	-------- P
Langlie B	3	M	14-25-37	110	1,108	--------
Langlie	4	L	14-25-37	1,463	2,366	--------
Sun Oil Co.:						
Lanehart	1	P	20-25-37	104	131,000	--------
Do	2	I	20-25-37	95	204,000	--------
Stuart	1	B	15-25-37	1,663	4,340	--------
Do	2	G	15-25-37	1,664	1,570	--------
Do	3	A	15-25-37	1,664	21,620	--------
Do	4	H	15-25-37	1,664	2,740	--------
The Texas Co.:						
Fristoe A	2	A	3-25-37	1,652	1,120	--------
Fristoe	3	H	3-25-37	1,662	1,875	--------
Do	4	I	3-25-37	1,651	1,565	--------
Do	5	P	3-25-37	1,654	2,942	--------
Tidewater Associated Oil Co., Coats B	1	D	21-25-37	806	961	--------
Two States Oil Co., Stuart	1	L	11-25-37	1,602	284	--------
Woodley Petroleum Co.:						
Cook	1	O	18-25-37	496	800	2,380
Do	2	P	28-25-37	352	800	--------
Weiner, Sam:						
Smith	1	A	4-25-37	1,662	575	--------
Do	2	H	4-25-37	1,662	575	--------
LYNN AREA						
Atlantic-Kirby, Davis	1	L	34-25-36	1,527	1,200	--------
Barnsdall Oil Co.:						
J. Whitten	1	P	33-23-36	1,524	800	--------
Do	2	I	33-23-36	1,524	1,000	--------
Continental Oil Co.:						
Danciger	1	B	8-23-36	1,529	851	751
Farney	1	O	5-23-36	801	400	629 GL
Do	2	I	5-23-36	790	4,410	60
General Crude Oil Co.:						
State C	1	N	16-23-36	1,534	----------	1,629
State	2	O	16-23-36	1,557	----------	--------
Gulf Oil Corporation:						
Janda E	1	B	21-23-36	1,533	2,000	--------
Janda	2	A	21-23-36	1,540	2,400	--------
Whitten	1	M	33-25-36	905	2,000	--------
Republic Prod. Co., Davis	1	M	34-23-36	1,533	127	--------
Shell Petroleum Corporation:						
State A	1	J	16-23-36	833	1,100	2,263
R. Whitten	1	H	33-23-36	1,532	2,300	--------
The Texas Co., State B	2	P	21-23-36	1,634	2,590	32
Texas Pacific Coal & Oil Co.:						
State A	2	L	21-23-36	1,132	----------	13,795 P
State	3	E	21-23-36	348	----------	8,370
Do	4	C	21-23-36	100	----------	1,116
Do	6	F	21-23-36	1,433	----------	5,276
Do	7	D	22-23-26	381	----------	--------

Gas-oil ratio and water report—Continued

SAND AREAS, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
MATTIX AREA						
Addison Oil Co.: Knight	1–2–3	--------	27–24–37	4,320	----------	-------- P
Amerada Petroleum Corporation: Johnson	1	L	27–24–37	1,243	729	--------
Atlantic Refining Co.: State "24"	1	N	32–24–37	1,494	1,687	--------
A. G. Carter: Mattix	1	F	3–24–37	679	491	-------- P
Cities Service Oil Co.: Hodges	1	D	8–24–37	1,198	2,175	--------
Continental Oil Co :						
Jack	1	B	27–24–37	1,647	1,079	--------
Do	1	M	21–24–37	1,780	1,132	--------
Do	1	I	20–24–37	1,534	4,339	--------
Do	2	P	20–24–37	1,537	1,109	--------
Do	3	H	20–24–37	1,533	921	--------
Do	1	A	29–24–37	1,544	1,583	--------
Gulf Oil Corporation:						
Carr	1	L	3–24–37	114	109	-------- P
Holt State	1	O	16–24–37	251	119	-------- P
Humble Oil & Refining Co.:						
Williams	1	M	34–24–37	1,694	1,683	--------
Do	2	F	34–24–37	1,649	1,632	--------
Do	3	E	34–24–37	1,649	1,809	--------
McLaughlin, C. T.: Imperial Roy	1	F	9–24–37	642	1,750	--------
Parker Drilling Co.:						
Erwin	1	M	35–24–37	1,740	3,266	--------
Do	2	L	35–24–37	1,733	2,500	--------
Phillips Petroleum Corporation:						
Woolworth	1	H	33–24–37	1,562	908	--------
Do	2	I	33–24–37	1,562	1,476	--------
Do	3	P	33–24–37	1,562	1,398	--------
Plains Prod. Co.:						
Knight	1	K	21–24–37	1,533	----------	--------
Do	2	L	22–24–37	1,534	----------	--------
Do	3	P	21–24–37	1,534	----------	--------
Do	4	M	22–24–37	1,534	----------	--------
Mosely	1	J	34–24–37	1,360	----------	--------
Do	2	I	34–24–37	1,360	----------	--------
Williams	1	G	34–24–37	937	----------	--------
Repollo Oil Co.:						
Carter, L	1	H	9–24–37	1,362	2,426	--------
Carter, P	1	G	9–24–37	352	14,582	--------
Hair	1	D	9–24–37	1,359	5,382	--------
Jamison	1	N	21–24–37	1,545	2,750	--------
Do	2	E	22–24–37	1,535	2,902	--------
Do	3	A	21–24–37	1,534	3,712	--------
Mosely	1	O	34–24–37	1,938	1,022	--------
Do	2	N	34–24–37	1,534	2,816	--------
Do	3	M	34–24–37	1,534	2,420	--------
Do	4	P	34–24–37	1,534	365	--------
State "157"	1	O	32–24–37	----------	----------	--------
Schermerhorn Oil Corporation:						
Woolworth	1	B	28–24–37	1,516	2,710	--------
Do	2	H	28–24–37	1,516	1,440	--------
Do	3	J	28–24–37	----------	1,703	--------
Shasta Oil Co.: Woolworth	1–2–3	--------	28–24–37	4,407	----------	--------
Shell Petroleum Corporation:						
Black	1	J	21–24–37	1,595	725	--------
Do	2	O	21–24–37	1,595	720	--------
Do	3	N	21–24–37	1,596	850	--------
Skelly Oil Co.:						
Johns	1	L	21–24–37	1,299	900	--------
State	1	M	32–24–37	1,602	1,730	--------
Toby	1	M	7–24–37	1,532	1,190	--------
Stanolind Oil & Gas Co.:						
C. Meyers A	1	K	22–24–37	1,539	3,876	--------
C. Meyers	3	O	22–24–37	1,539	3,356	--------
Do	4	N	22–24–37	1,540	1,026	--------
C. Meyers B	2	M	4–24–37	819	7,358	--------
C. Meyers	3	I	4–24–37	148	1,327	--------
Do	4	L	21–24–37	932	1,092	39
The Texas Co.:						
Black	1	G	21–24–37	1,508	3,119	--------
Do	2	K	21–24–37	1,456	2,852	--------
Do	3	B	21–24–37	1,449	1,657	--------
Do	4	F	21–24–37	457	1,570	--------
Fanning	1	K	4–24–37	98	1,152	67 P
Do	2	B	4–24–37	333	9,765	--------
Fristoe	1	E	35–24–37	598	19,000	--------
Young	1	P	5–24–37	689	807	-------- P

Gas-oil ratio and water report—Continued

SAND AREAS, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
MATTIX AREA—continued						
Western Gas Co.:						
Harrison	2	D	29-24-37	68	Gas well	--------
Do	3	L	20-24-37	70	Gas well	--------
Do	4	L	29-24-37	218	Gas well	--------
Weier Drilling Co.: L. Woolworth	1	K	28-24-37	1,535	--------	--------
Weiner, Sam· Woolworth	1	J	33-25-37	1,584	710	--------
PENROSE AREA						
Amerada Petroleum Corporation:						
Corrigan	1	G	4-22-37	1,671	5,168	--------
Do	2	H	4-22-37	1,256	11,403	--------
Atlantic Refining Co.: Grizzell	1	H	6-22-37	1,039	1,243	21
Bradley Oil Co.:						
Downes	1	C	5-22-37	1,427	--------	--------
Grizzell	1	G	5-22-37	842	--------	--------
Carter:						
Elliott	1	D	22-22-37	1,032	185	--------
Do	2	C	22-22-37	556	185	--------
Cities Service Oil Co.:						
Brunson	1	J	4-22-37	1,569	6,780	--------
Do	2	O	3-22-37	1,533	7,780	--------
Do	3	O	4-22-37	1,537	6,730	--------
Walden	1	F	21-22-37	1,208	4,800	--------
Do	2	C	21-22-37	1,094	5,330	--------
Continental Oil Co.:						
Elliott	1	P	15-22-37	800	3,516	-------- GL
Do	2	O	15-22-37	656	20,862	--------
Elliott A	1	P	21-22-37	350	13,717	--------
Elliott	2	O	21-22-37	400	215	--------
Elliott A	1	M	22-22-37	556	14,690	--------
Elliott B	1	I	6-22-37	1,553	13,526	--------
Elliott	2	J	6-22-37	1,099	2,181	--------
Do	3	P	6-22-37	669	18,831	278
Elliott B	1	E	9-22-37	877	26,112	--------
Elliott	1	A	17-22-37	1,534	3,896	--------
Devonian Oil Co.: Christmas	1	I	28-22-37	950	733	-------- P
Farrell, J. E.: Walden A-B-C	--------	--------	--------	2,895	--------	-------- GL
Gulf Oil Corporation:						
Baker	1	P	5-22-37	1,441	9,473	--------
Do	2	I	5-22-37	1,074	18,400	--------
Boyd	1	M	23-22-37	843	1,351	101
Cole State	1	P	16-22-37	1,598	18,782	--------
Cole B	1	A	16-22-37	1,662	1,960	--------
Cole	2	D	16-22-37	1,662	980	--------
Manda	1	N	21-22-37	871	2,150	--------
Mattern D	1	K	6-22-37	911	2,758	124
Rinewalt	1	E	4-22-37	1,526	13,908	--------
Stebbins B	1	F	5-22-37	1,232	10,793	--------
Stebbins	2	E	5-22-37	1,035	2,000	50
Stebbins A	1	A	5-22-37	1,347	3,181	--------
Stebbins	2	B	5-22-37	1,342	10,973	--------
Stitcher	1	N	4-22-37	1,075	16,608	--------
Humble Oil & Refining Co.:						
Greenwood	1	P	9-22-37	1,677	10,624	--------
Do	2	D	9-22-37	1,876	2,526	--------
Do	3	M	9-22-37	1,876	2,407	--------
Do	4	N	9-22-37	784	2,279	--------
State H	1	M	27-22-37	1,649	898	--------
State	2	N	27-22-37	1,649	1,143	--------
Do	3	D	34-22-37	1,649	1,032	--------
Do	4	C	34-22-37	1,649	1,398	--------
Landreth Prod. Corporation:						
Grizzell	1	N	5-22-37	862	1,037	-------- GL
Do	2	K	5-22-37	862	1,037	-------- GL
Do	3	I	5-22-37	862	1,036	-------- GL
Do	4	M	5-22-37	862	1,036	-------- GL
Do	1	G	8-22-37	1,669	2,844	-------- GL
Do	2	H	8-22-37	1,669	2,844	-------- GL
Magnolia Petroleum Co.:						
Cary	1	I	21-22-37	457	--------	-------- P
Do	2	K	21-22-37	899	1,761	--------
Do	3	J	22-22-37	883	--------	-------- P
Brunson Argo	1	B	9-22-37	1,662	1,335	--------
Do	2	A	9-22-37	1,717	1,469	--------
Midcontinent Petroleum Corporation: Owens	1	D	3-22-37	344	1,376	-------- P

Gas-oil ratio and water report—Continued

SAND AREAS, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
PENROSE AREA—continued						
Ohio Oil Co.:						
Grizzell	1	O	5-22-37	1,467	2,500	--------
Do	2	J	5-22-37	1,468	2,499	--------
Walden	1	A	21-22-37	740	9,716	--------
Olean Petroleum Co.:						
Boyd	1	L	23-22-37	192	----------	--------
Brunson	1	P	4-22-37	888	----------	--------
Farrell	1	I	22-22-37	1,232	----------	--------
Penrose-Rowan:						
Cary	1	I	22-22-37	1,530	----------	--------
Do	2	K	22-22-37	1,530	----------	--------
Do	3	F	22-22-37	930	----------	--------
Do	4	E	22-22-37	581	----------	--------
Christmas	1	P	28-22-37	1,646	1,500	--------
Elliott A	1	L	27-22-37	1,756	----------	--------
Elliott	2	K	27-22-37	1,657	----------	--------
Elliott B	1	C	9-22-37	496	----------	--------
Elliott	2	D	9-22-37	1,292	----------	--------
Walden	1	D	15-22-37	1,702	364	--------
Peters, Lem:						
Coll	1	M	26-22-37	1,391	----------	--------
Graham	1	O	27-22-37	1,512	----------	--------
May	1-2-3-4	--------	27-22-37	4,605	----------	--------
Repollo Oil Co.:						
Boyd	1	E	23-22-37	901	470	143 P
Do	2	D	23-22-37	589	416	--------
Christmas	1	A	28-22-37	844	2,990	--------
Do	2	H	28-22-37	1,540	2,210	--------
Do	3	D	28-22-37	686	1,742	--------
Samedan Oil Corporation: Parks	1	M	14-22-37	917	1,686	-------- P
Shell Petroleum Corporation:						
Grizzell	1	J	8-22-37	1,642	3,100	--------
Do	2	H	8-22-37	1,646	3,640	--------
Do	3	P	8-22-37	1,552	1,210	--------
Do	4	O	8-22-37	894	913	--------
Rinewalt	1	F	4-22-37	1,700	5,563	--------
Do	2	C	4-22-37	1,699	5,240	--------
Skelly Oil Co.:						
Baker, A .B	1	D	26-22-37	296	200	-------- P
Baker	1	H	22-22-37	830	1,657	-------- P
Do	2	D	27-22-37	1,307	1,594	--------
Do	3	C	27-22-37	1,282	3,492	--------
Do	4	E	27-22-37	1,096	1,586	-------- P
Do	5	F	27-22-37	1,282	3,476	--------
Do	6	C	27-22-37	1,717	2,340	--------
Baker, B	1	M	10-22-37	1,533	2,107	--------
Grizzell	1	G	6-22-37	459	350	-------- P
Stitcher	1	K	4-22-37	1,246	2,164	--------
Do	2	L	4-22-37	1,245	2,164	--------
Southern Petroleum Exploration Co.: Rinewalt	1	D	4-22-37	1,713	2,300	--------
Stanolind Oil & Gas Co.: Owens	1	E	3-22-37	417	----------	-------- P
Mac & Stauffer:						
Grizzell	1	B	8-22-37	1,377	----------	--------
Do	2	A	8-22-37	1,336	----------	130
The Texas Co.:						
Falby A	1	C	8-22-37	469	3,382	41
Falby	2	D	8-22-37	821	20,597	17
Do	3	F	8-22-37	1,457	1,405	--------
Falby B	1	K	8-22-37	1,734	1,519	--------
P. D. Co. St. A	1	H	21-22-37	982	9,400	--------
Tidewater Associated Oil Cos.:						
Walden	1	H	21-22-37	805	9,292	--------
Do	2	G	21-22-37	990	6,765	--------
Do	3	E	21-22-37	310	5,978	--------
Twin Oil Corporation:						
Corrigan	1	B	4-22-37	3,068	1,582	--------
Do	2	A	4-22-37		1,750	--------
State B	1	B	17-22-37	1,552	1,950	--------
Two States Oil Co.:						
Downes	1	D	5-22-37	1,313	1,050	--------
Do	2	A	6-22-37	1,314	995	--------

Gas-oil ratio and water report—Continued

SAND AREAS, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
SKELLY AREA						
Gulf Oil Corporation:						
Davis	1	A	8-23-37	322	29,164	61
Leonard B St	1	P	32-23-37	464	6,250	--------
Peters, Lcm: May, T. O	1	B	34-22-37	2,331	----------	--------
Repollo Oil Co.: Cowden	1	A	31-23-37	162	12,250	--------
Samedan Oil Corporation:						
Hughes	1	K	4-23-36	534	----------	-------- P
Do	2	J	4-23-36	534	----------	-------- P
Do	3	I	4-23-36	291	----------	-------- P
Do	4	J	10-23-37	805	----------	-------- P
Do	5	K	10-23-37	211	----------	-------- P
Skelly Oil Co.:						
Harrison	1	L	5-23-37	1,026	200	186 P
King, B. L	1	O	32-22-37	----------	240	-------- P
King, A. L	1	E	4-23-37	655	125	-------- P
King, B	1	K	33-22-37	1,655	760	--------
Sims, Ellen	1	J	3-23-37	1,547	3,307	--------
Sims	2	G	3-23-37	1,546	3,307	--------
Do	3	P	3-23-37	1,547	3,307	-------- P
Sims, A	1	O	3-23-37	1,699	3,272	--------
Sims, E	1	G	10-23-37	1,740	1,844	--------
Sims, G. W	1	C	10-23-37	1,216	2,728	--------
Sims	2	A	10-23-37	1,216	2,728	--------
Do	3	B	10-23-37	1,216	2,728	--------
Do	4	D	10-23-37	1,217	2,728	--------
Do	5	F	10-23-37	1,217	2,728	--------
Sims, H. O	1	G	4-23-37	1,555	798	-------- P
Sims	2	H	3-23-37	1,555	776	--------
Do	3	F	3-23-37	1,555	1,900	--------
Do	4	D	3-23-37	926	1,225	--------
Sims, D	1	E	3-23-37	1,569	3,015	--------
Sims, W. P	1	A	10-23-37	788	2,891	-------- P
Sims	2	H	10-23-37	1,012	3,028	--------
Sims, B	1	B	10-25-37	792	1,283	-------- P
Sims, C	1A	N	3-23-37	1,693	2,933	--------
Sims, R. R	1	P	4-23-37	875	5,017	-------- P
Sims	2	K	3-23-37	1,531	2,356	--------
Do	3	O	4-23-37	1,250	4,015	-------- P
Do	4	N	4-23-37	1,408	3,061	--------
Do	5	L	4-23-37	1,532	2,356	--------
Do	6	K	4-23-37	1,532	2,356	--------
Sun Oil Co.: Richards	1	I	6-23-37	----------	500	620 P
Western Gas Co.:						
Cowden	1	P	30-23-37	760	10,617	--------
Davis	1	O	33-23-37	590	2,148	--------

SOUTH LOVINGTON

	Casting and tubing record	Sacks cement
Company, Amerada:		
Lease: State LA No. 1	Size, 9⅝; depth, 2,893	500
Location: 1-17-36	Size, 7⅝; depth, 3,459	50
Elevation: 3,830	Size, —; depth, —	
Total depth; 4,815	Tubing, size, —; tubing depth, —	----------
Completion date: Jan. 19, 1939	Packer depth —	----------
Initial production test	Test after acid or shot	----------
Company, Skelly:		
Lease: State N No. 1	Size, 13; depth, 293	200
Location: 36-16-36	Size, 9⅝; depth, 3,071	500
Elevation: 3,849	Size, 7; depth, 4,634	300
Total depth: 5,012	Tubing size, 2½; tubing depth, 5,009	----------
Completion date: Jan. 3, 1939	Packer depth, —	----------
Initial production test	Test after acid or shot, 186/day	----------
Company, Repollo:		
Lease: State 182A-1	Size, 13; depth, 299	200
Location: 31-16-37	Size, 9⅝; depth, 3,002	500
Elevation: 3,820	Size, 7; depth, 4,525	200
Total depth: 4,760	Tubing, size, 2½; tubing depth, 4,700	----------
Completion date: Jan. 25, 1939	Packer depth —	----------
Initial production test: ½ hour	Test after acid or shot, 432/22 hour	----------

Gas-oil ratio and water report

HOBBS FIELD, DECEMBER 1938

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Amerada Petroleum Corporation:						
Hardin	1	M	18-18-38	1,697	10,000	27,838
Do	2	N	18-18-38	1,996	11,850	36,594
Do	3	L	18-18-38	1,173	1,000	385
McKinley	1	D	30-18-38	1,913	1,320	--------
Do	2	F	30-18-38	1,631	489	--------
Do	3	G	30-18-38	1,321	1,295	--------
Do	4	E	30-18-38	1,396	577	--------
State A	1	B	32-18-38	1,657	1,765	--------
State	2	A	32-18-38	1,099	3,240	--------
State B	1	F	29-18-38	1,929	595	--------
State	2	G	29-18-38	2,080	415	--------
Do	3	B	29-18-38	2,222	415	--------
Do	4	D	29-18-38	2,292	490	--------
State C	1	A	36-18-37	1,086	3,010	576
State E	1	E	24-18-37	2,240	1,957	3,137
State	2	D	24-18-37	1,191	2,185	174
Atlantic Refining Co.:						
Bradley	1	D	6-19-38	1,202	3,519	2,503 P
Grimes	1	O	20-18-38	1,794	545	4,716 P
Cities Service Oil Co.:						
Fowler	1	A	31-18-38	2,147	822	--------
Do	2	B	31-18-38	1,733	914	--------
Do	3	G	31-18-38	1,661	1,000	--------
Do	4	H	31-18-38	2,081	756	1,210
Hardin	1	F	19-18-38	1,841	1,310	60
Do	2	E	19-18-38	2,858	956	75
Do	3	G	19-18-38	2,010	1,122	8,600
Do	4	D	19-18-38	1,712	1,365	7,100
Continental Oil Co.:						
Grimes	1	O	28-18-38	1,372	1,719	--------
Do	2	P	28-18-38	1,245	1,746	--------
Do	3	J	28-18-38	1,793	2,036	--------
Do	4	I	28-18-38	1,555	1,710	--------
State A	1	J	5-19-38	1,397	2,262	541
State	1	J	29-18-38	1,868	9,728	--------
Do	2	N	29-18-38	1,205	4,978	--------
Do	3	K	29-18-38	1,755	3,185	--------
Do	1	M	33-18-38	1,482	951	38
Do	2	I	33-18-38	1,171	835	169
Do	3	K	33-18-38	2,634	1,463	--------
Do	4	J	33-18-38	1,108	1,857	--------
Do	5	O	33-18-38	1,409	2,401	--------
Do	6	N	33-18-38	1,888	1,956	--------
Do	7	G	33-18-38	1,138	2,563	--------
State B	1	N	13-18-38	1,593	3,769	1,466
State	2	M	13-18-38	1,329	3,862	--------
State B	1	O	25-18-37	1,944	542	217
Getty Oil Co.:						
McKinley	1	G	30-18-38	2,123	2,129	--------
Do	2	H	30-18-38	1,824	2,130	--------
Do	4	B	30-18-38	1,493	2,140	--------
Do	5	A	30-18-38	1,889	2.130	--------
Gulf Oil Corporation:						
Graham	1	H	24-18-37	3,127	1,159	155
Do	2	A	24-18-37	1,484	1,512	422
Do	3	G	24-18-37	2,115	1,055	484
Do	4	B	24-18-37	1,601	3,008	8,739 GL
Grimes, W	1	D	32-18-38	2,379	634	--------
Grimes	2	F	32-18-38	2,810	4,251	192
Do	3	K	32-18-38	2,925	2,593	2,865
Do	5	M	32-18-38	1,531	2,370	142
Do	4-7	C	32-18-38	1,314	4,088	124
Do	6	M	32-18-38	1,367	3,071	--------
Do	8	E	32-18-38	2,304	2,719	141
Do	9	L	32-18-38	2,309	2,534	116
Grimes E	1	L	33-18-38	1,256	1,734	--------
Grimes	2	H	33-18-38	1,377	1,179	--------
Do	3	B	33-18-38	1,660	17,885	--------
Do	4	A	33-18-38	2.224	11,812	--------
Grimes N	1	M	21-18-38	1,397	678	--------
Grimes	2	N	21-18-38	1,744	636	--------
Do	3	L	21-18-38	1,969	550	294
Do	4	K	21-18-38	1,545	721	--------
Hardin	1	O	18-18-38	2,051	1,316	649
Do	2	P	18-18-38	1,371	1,714	1.358

Gas-oil ratio and water report—Continued

HOBBS FIELD, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Humble Oil & Refining Co.:						
Bowers A	5	I	30-18-38	1,387	2,186	--------
Bowers	2	J	30-18-38	1,619	635	--------
Do	3	M	30-18-38	1,232	1,847	--------
Do	4	P	30-18-38	1,604	1,554	--------
Do	8	O	30-18-38	1,449	1,624	--------
Do	9	B	29-18-38	1,845	524	--------
Do	10	L	29-18-38	1,348	821	--------
Bowers B	1	D	29-18-38	1,953	502	--------
Bowers	2	J	20-18-38	1,360	945	2,023
Do	3	P	20-18-38	1,445	553	--------
Grimes	1	A	29-18-38	1,814	482	--------
State A	1	I	25-18-37	2,243	2,136	2,255
State	2	P	25-18-37	1,406	2,085	12,760 GL
Do	3	J	25-18-37	1,220	2,667	6.970 GL
Landreth Production Corporation:						
State C	1	C	6-19-38	2,057	1,000	1,300 P
State B	1	E	33-18-38	1,895	580	4 GL
State	2	F	33-18-38	1,895	580	4 GL
Magnolia Petroleum Co.: Berry	1	K	31-18-38	975	819	--------
Midcontinent Petroleum Corporation: Fowler	1	D	31-18-38	1,132	1,062	33
Ohio Oil Co.:						
State	1	H	30-18-38	2,163	----------	--------
Do	2	N	30-18-38	1,261	----------	86
Do	3	L	30-18-38	1,993	823	--------
Do	4	M	30-18-38	1,036	682	1,490
Do	1-4	J	32-18-38	2.204	----------	--------
Do	2	P	32-18-38	1,427	----------	144
Do	3	I	32-18-38	2,500	1,222	253
Do	5	O	32-18-38	1,463	2,374	--------
Oil Well Drilling Co.:						
Grimes	1	I	20-18-38	1,290	428	36,800 P
Morris	1	O	21-18-38	1,235	568	--------
Repollo Oil Co.:						
Crump	1	B	15-19-38	982	4,810	221
Do	2	B	15-19-38	982	4,222	476
Grimes	1	E	28-18-38	1,845	730	--------
Do	2	F	28-18-38	1,103	724	--------
Do	3	D	28-18-38	1,410	747	--------
Do	4	C	28-18-38	1,133	762	--------
Selman	1	C	15-19-38	891	1,550	884 P
Samedan Oil Corporation:						
Byers	1	A	5-19-38	1,948	624	--------
Do	2	G	5-19-38	1,660	963	--------
Moon A	1	G	5-19-38	1,309	1,725	--------
Moon	2	A	5-19-38	1,768	1,417	--------
Moon B	1	H	5-19-39	1,355	3,824	--------
Moon	2	A	5-19-38	1,174	3,131	--------
State B	1	F	25-18-37	1,068	743	--------
State C	1	N	24-18-37	1,854	601	--------
State	2	K	24-18-37	1,912	816	699
Do	3	L	28-18-37	2,587	932	--------
Do	4	M	24-18-37	2,541	601	--------
Turner	1	J	34-18-38	2,074	627	--------
Do	2	O	34-18-38	1,898	841	--------
Turner B	1	O	34-18-38	1,069	1,908	336
Shell Petroleum Corporation:						
Berry	1	P	31-18-38	1,164	1,980	372
Do	2	J	31-18-38	1,206	2,225	434
Do	3	I	31-18-38	1,744	625	1,395
Do	4	O	31-18-38	1,154	3,800	--------
Grimes	1	M	28-18-38	1,340	15,780	--------
Do	2	L	28-18-38	1,779	1,499	--------
Do	3	K	28-18-38	1,155	1,341	--------
Do	4	N	28-18-38	1,219	1,440	--------
McKinley A	1	M	19-18-38	1,884	1,231	--------
McKiney	2	D	19-18-38	1,996	968	--------
Do	3	P	19-18-38	1,839	690	--------
Do	4	N	19-18-38	1,495	1,655	--------
Do	5	J	19-18-38	1,822	1,050	620
Do	6	K	19-18-38	2,163	781	--------
Do	7	L	19-18-38	2,008	661	--------
Do	8	I	19-18-38	2,349	1,240	--------
McKinley B	1	L	20-18-38	2,188	1,470	6,510
Do	2	N	20-18-38	1,801	1,720	--------
Do	3	M	20-18-38	1,780	1,020	--------
Do	4	K	20-18-38	2,247	----------	4.150 P

Gas-oil ratio and water report—Continued

HOBBS FIELD, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Shell Petroleum Corporation—Con.						
Rice	1	P	13-18-38	1,615	13,635	93
Do	2	O	13-18-38	1,425	3,070	589
Do	3	I	13-18-38	1,315	6,330	372
Sanger	1	M	27-18-38	1,315	1,475	--------
Do	2	N	27-18-38	1,254	833	--------
Do	3	L	27-18-38	1,325	1,715	--------
Do	4	E	27-18-38	1,211	899	--------
Do	5	K	27-18-38	1,190	1,426	--------
State A	1-2-4	G	32-18-38	2,070	1,455	--------
State	3	H	32-18-38	1,459	1,719	--------
State B	1	D	33-18-38	1,171	8,678	--------
State	2	G	33-18-38	1,408	958	--------
State D	1	F	24-18-37	1,486	1,579	992
State	2	C	24-18-37	2,557	4,620	14,382
Thrope	1	J	10-19-38	1,018	2,065	--------
Turner	1	C	34-18-38	1,673	750	--------
Do	2	B	34-18-38	1,092	1,130	--------
Skelly Oil Co.:						
Fowler	1	C	31-18-38	1,980	859	--------
Do	2	F	31-18-38	1,640	859	--------
McKinley	1	M	20-18-38	1,763	800	6,068
State	1	M	17-18-38	4,090	1,341	16,583 P
Turner	1	F	34-18-38	1,540	411	--------
Do	2	O	34-18-38	1,167	1,236	--------
Standard Oil Co. of Texas:						
McKinley	1	F	20-18-38	2,071	1,700	2,686
Do	2	E	20-18-38	1,740	2,500	12,513
State	1-3	P	29-18-38	1,187	650	--------
Do	2-4	O	29-18-38	1,459	1,900	--------
Stanolind Oil & Gas Co.:						
Byers	8	D	3-19-38	1,509	345	--------
Do	11	C	3-19-38	1,524	270	--------
Do	26	F	3-19-38	1,250	839	32
Do	29	E	3-19-38	1,683	696	--------
Do	8	B	4-19-38	1,609	1,933	--------
Do	11	A	4-19-38	2,317	588	23
Do	26	H	4-19-38	2,763	1,688	432
Do	33	G	4-19-38	2,563	537	1,051
Capps	7X	J	3-19-38	1,165	971	--------
Do	8	L	3-19-38	1,153	411	--------
Do	11	K	3-19-38	1,057	1,000	42
Do	30X	O	3-19-38	1,043	1,074	--------
Do	26	N	3-19-38	872	2,209	--------
Do	31	M	3-19-38	981	2,339	--------
Leach	24	F	15-19-38	1,050	1,965	1,089 P
McKinley	1	C	5-19-38	1,365	2,455	--------
Do	6	D	5-19-38	1,129	2,115	--------
Do	26	F	5-19-38	1,510	3,235	286
State A "3"	3	K	4-19-38	1,040	1,560	--------
State A "2"	4	J	4-19-38	1,251	314	74
State A "1"	8	D	4-19-38	1,813	2,223	--------
State	11	C	4-19-38	1,503	4,638	--------
State A "2"	11	I	4-19-38	1,593	1,715	--------
State A "1"	26	F	4-19-38	1,824	897	1,882
State A "3"	26	N	4-19-38	1,160	1,753	--------
State A "2"	26	P	4-19-38	944	2,041	--------
State A "2"	29	O	4-19-38	1,012	989	--------
State A "1"	33	E	4-19-38	1,246	3,753	106
State A "4"	11	X	5-19-38	1,162	2,070	--------
State A "5"	1	A	9-19-38	912	2,917	--------
State	8	B	9-19-38	922	1,259	--------
State A "6"	11	C	9-19-38	1,238	2,305	--------
State A "5"	29	G	9-19-38	1,771	1,006	--------
State A "7"	8	D	10-19-38	936	3,585	--------
State A "5"	26	H	9-19-38	889	2,786	--------
State	24-36	N	10-19-38	890	867	45 P
State A "7"	29	E	10-19-38	931	5,340	--------
State A "8"	29	M	10-19-38	890	553	1,523 P
State A "9"	1	C	15-19-38	877	948	131
State	13A	C	15-19-38	877	521	705
State "10"	26	P	33-18-38	1,413	1,612	--------
Terry	8	D	9-19-38	1,176	2,011	26 P
Do	8	J	9-19-38	2,082	1,589	3,349
Do	11	I	9-19-38	837	2,599	--------
Do	26	P	9-19-38	906	392	9,639
Do	8	M	10-19-38	1,009	2,280	--------
Do	13	K	10-19-38	1,012	2,166	76 P

Gas-oil ratio and water report—Continued

HOBBS FIELD, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Stanolind Oil & Gas Co.—Continued.						
Thorpe	11	C	10-19-38	882	3,165	--------
Do	7X	B	10-19-38	1,148	2,145	--------
Do	26	F	10-19-38	906	6,530	--------
Do	30X	G	10-19-38	1,097	2,925	--------
Turner	8	D	34-18-38	1,235	1,343	--------
Do	8X	L	34-18-38	1,822	2,500	--------
Do	11	K	34-18-38	1,959	1,759	--------
Do	26	N	34-18-38	1,385	978	--------
Do	29	M	34-18-38	1,691	1,173	--------
Do	29X	E	34-18-38	1,775	2,179	--------
Sun Oil Co.:						
McKinley	1	A	5-19-38	1,593	4,025	--------
Do	2	H	5-19-38	1,330	3,920	--------
Do	3	B	5-19-38	1,405	5,000	--------
Do	4	G	5-19-38	2,042	4,560	--------
McKinley B	1	C	20-18-38	166	500	5 P
The Texas Co.:						
McKinley	1	L	4-19-38	1,688	1,242	1,184
Do	2	I	5-19-38	1,341	1,375	102
Do	3	M	4-19-38	1,842	1,706	10,033
Selman	1	J	15-19-38	1,037	1,513	--------
State	1	A	25-18-37	1,995	1,387	--------
Do	2	H	25-18-37	2,013	1,751	122
Do	3	G	25-18-37	1,927	1,502	117
Do	4	B	25-18-37	1,924	1,766	1,475
Texas Pacific Coal & Oil Co.:						
State	1	P	24-18-37	1,697	1,346	--------
Do	2	I	24-18-37	1,851	1,300	--------
Do	3	J	24-18-37	1,913	3,096	--------
Do	4	C	24-18-37	1,727	1,484	--------
Tidewater Assoc. Oil Co.:						
Grimes	1-8	I	29-18-38	1,827	2,236	--------
Do	2-4-5	H	29-18-38	1,706	573	--------
Hardin	1	G	19-18-38	1,823	913	420
Do	2	H	19-18-38	2,090	781	100
Do	3	B	19-18-38	1,312	826	300
Do	4	A	19-18-38	1,746	569	14,400
State	1	H	14-18-37	160	981	--------
Two States Oil Co.: Morris	1	P	21-18-38	1,142	1,038	--------
Walker Oil Corporation:						
Terry	1	G	10-19-38	784	620	8
Do	2	G	10-19-38	784	620	8

JAL FIELD, DECEMBER 1938

Amerada Petroleum Corporation: Dyer	1	G	31-25-37	1,146	260	15 P
Anton Chico Development Co.: Conditt	1	M	12-25-36	1,679	--------	10
Barnsdall Oil Co.: Forrist	1	L	24-25-37	337	600	1,350
Cities Service Oil Co.:						
Dyer	1	O	31-25-37	1,535	500	8,640 P
Do	2	J	31-25-37	1,546	600	7,620 P
Lindley B	1	N	13-25-36	1,741	500	7,750 P
Lindley	--------	--------	--------	--------	--------	--------
Continental Oil Co.:						
Sholes B	1	E	13-25-36	1,326	3,011	6,200
Sholes	2	D	13-25-36	1,539	400	13,020 GL
Wells A	1	H	11-25-36	1,422	5,051	7,950
Gulf Oil Corporation: Ramsey, Arn B	1	M	32-25-37	41	13,333	640
Humble Oil & Refining Co.:						
Lindley A	1	A	23-25-36	849	9,003	3,190
Lindley	4	D	24-25-36	424	9,563	68,200 GL
Do	2	H	13-25-36	357	18,246	68,200
Magnolia Petroleum Co.: Lindley	1	N	26-25-36	801	521	3 P
Repollo Oil Co.: Hanagan	3	L	13-25-36	1,535	2,725	940
Skelly Oil Co.: Joyner	1	I	26-25-36	1,013	2,340	7,989 P
Southern Petroleum Exploration Co.:						
Ascarte A	1	C	24-25-36	138	--------	37,000
Ascarte	2	F	24-25-36	278	65,400	66,000
Ascarte B	1	K	24-25-36	1,577	4,900	8,000
Stanolind Oil & Gas Co.: Gregory	22	N	21-25-37	346	10,899	117,490 GL
The Texas Co.:						
Shephard A	2	E	6-26-37	349	2,565	11,834
Shephard B	2	I	6-26-37	1,532	1,815	9,248
Tidewater Associated Oil Co.: Coates A	1	F	21-25-37	1,542	655	11,792 P
Johnson: Wilson	1	B	23-25-36	686	74	7,000 P

Gas-oil ratio and water report—Continued

JAL FIELD, DECEMBER 1938—Continued

Company lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
EAVES AREA						
Continental Oil Co.:						
Eaves A	2	M	19–26–37	1,511	400	314 GL
Eaves	3	I	19–26–37	1,498	896	152
Do	1	A	30–26–37	1,508	400	234 GL
Do	2	C	30–26–37	1,574	400	1,236 GL
Eaves B	1	G	30–26–37	1,547	400	30 GL
McCallister A	1	O	24–26–37	283	--------	359 P
McCallister	2	A	24–26–37	1,510	400	720 GL
Do	3	P	24–26–37	1,615	1,098	120
Do	4	I	24–26–37	741	18,750	21,098
Gulf Oil Corporation: V. Ramsey	1	P	12–26–36	1,412	38,000	4,158
Stanolind Oil & Gas Co.:						
Farnsworth	1	A	13–26–36	960	Gas well	1,023
Do	2	P	13–26–36	1,005	2,397	15,810
Do	3	D	18–36–37	915	3,776	41,500
Do	4	B	18–26–37	905	3,100	56,420
Do	5	F	18–26–37	807	Gas well	--------
Farnsworth B	1	N	7–26–37	1,560	978	--------
Farnsworth	3	K	7–26–37	1,498	Gas well	--------
The Texas Co.:						
Moberly A	1	L	5–26–37	1,069	415	--------
Moberly C	1	J	17–26–37	158	3,115	--------
RHOADES AREA						
Getty Oil Co.: Riggs	1	D	1–26–37	813	198	--------
Great Western Prod., Inc.: State A	1	P	16–26–37	--------	77,164 Gas well	--------
Ohio Oil Co.:						
St. Fleming	1	A	2–26–37	764	--------	-------- P
Wills	1	C	35–26–37	125	--------	--------
The Texas Co.:						
Rhoades	1	C	16–26–37	871	82,754	--------
Do	2	J	16–26–37	767	50,786	--------

Monument field, completion reports, January 1939

	Casing and tubing record	Sax cement
Company, Amerada:		
Lease: Andrews No. 7	Size, 13; depth, 170	175
Location: 23–20–36	Size, 8⅝; depth, 2,663	500
Elevation: 3,584	Size, 5½; depth, 3,781	100
Total depth: 3,884	Tubing size, 2½; tubing depth, 3,879	--------
Completion date: Jan. 3, 1939	Packer depth, —	--------
Initial production test	Test after acid or shot, 44/3 hr	--------
Company, Continental:		
Lease: Sanderson A–B, No. 1	Size, 10¾; depth, 275	225
Location: 14–20–36	Size, 7⅝; depth, 1,241	425
Elevation: 3,575	Size, 2½; depth, 3,751	425
Total depth: 3,825	Tubing size, 2; tubing depth, 3,799	--------
Completion date: Jan. 15, 1939	Packer depth, —	--------
Initial production test 27/hr	Test after acid or shot	--------

MONUMENT FIELD, REMEDIAL WORK

Ohio, Barber No. 8, section 5–20–37.—Elevation 3,569. T. D. 3900. Seven-inch, cemented, 3,799 feet. Gas-oil ratio became excessive approximately 10,000 to 1. Ran Robinson packer to 3,840 feet, for apparent shut-off but after 30 days well had estimated gas-oil ratio of 2,000 to 1. Reran Robinson packer to 3,874 feet and on third attempt after pumping in Fibertex and two sacks of hulls got shut-off. Section between 3,874–3,900 acidized with 2,000 gallons. Took acid at 800 pounds. On completion flowed 38 barrels oil per hour with 365,000 gas. Flowing 2 barrels pipe line oil per hour on one-half-inch choke. Present gas-oil ratio 400 to 1. Completed January 26, 1939.

Gas-oil ratio and water report

MONUMENT FIELD, DECEMBER 1938

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Amerada Petroleum Corporation:						
Adkins	1	M	5-20-37	1,648	29,000	--------
Anderson	1	K	8-20-37	1,747	612	--------
Do	2	N	8-20-37	1,747	508	--------
Andrews	1	D	12-20-36	1,686	970	--------
Do	2	A	12-20-36	1,498	400	--------
Do	3	H	11-20-36	1,346	780	--------
Do	4	L	12-20-36	1,786	4,500	--------
Do	5	E	12-20-36	1,325	810	--------
Do	6	M	12-20-36	1,719	4,100	--------
Byrd	1	B	23-20-36	1,846	709	--------
Do	2	G	23-20-36	1,844	476	--------
Do	3	J	23-20-36	2,088	486	--------
Do	4	G	23-20-36	1,615	891	--------
Do	5	F	23-20-36	1,638	505	--------
Do	6	O	23-20-36	2,093	464	--------
Byrd A	1	K	23-20-36	1,209	797	--------
Byrd	2	N	23-20-36	1,226	766	--------
Culp	1	N	31-19-37	1,574	830	--------
Gaither	1	I	34-19-36	1,448	13,246	--------
Haney	1	M	33-19-37	1,582	488	--------
Lambert	1	B	6-20-37	1,592	700	--------
Do	2	G	6-20-37	1,592	2,353	--------
Do	3	A	6-20-37	1,598	725	--------
Do	4	H	6-20-37	1,599	1,009	--------
Larsen	1	F	32-19-37	1,555	690	--------
Do	2	C	32-19-37	1,555	1,184	102
Do	3	B	32-19-37	1,555	725	--------
Do	4	G	32-19-37	1,440	660	15
Laughlin	1	D	9-20-37	1,746	480	--------
Do	2	C	9-20-37	1,815	650	--------
Do	3	B	9-20-37	1,797	10,833	--------
Love	1	J	32-19-37	1,393	410	25
Phillips	1	A	1-20-36	1,587	510	--------
Do	2	H	1-20-36	1,592	1,380	--------
Do	3	G	1-20-36	1,594	445	--------
Do	4	B	1-20-36	1,585	485	--------
Phillips A	1	G	31-19-37	1,567	706	--------
Phillips	2	H	31-19-37	1,605	625	--------
Sarah Phillips	1	N	33-19-37	1,499	496	--------
Do	2	K	33-19-37	1,339	800	410
State D	1	D	1-20-36	1,736	800	--------
State	2	E	1-20-36	1,733	380	40
Do	3	F	1-20-36	1,735	380	--------
Do	4	G	1-20-36	1,730	550	--------
State F	1	M	36-19-36	1,643	714	--------
State	2	L	36-19-36	1,614	785	380
Do	3	K	36-19-36	1,640	9,500	--------
Do	4	N	36-19-36	1,638	1,160	--------
State G	1	M	18-19-37	1,329	795	--------
State	2	L	18-19-37	1,476	803	30
State H	1	O	1-20-36	1,593	424	--------
State	2	J	1-20-36	1,616	1,485	--------
State I	1	C	2-20-36	1,536	569	--------
State J	1	O	2-20-36	1,536	1,294	--------
State	2	I	2-20-36	1,546	1,356	--------
Do	3	K	2-20-36	1,489	1,223	--------
State K	1	F	29-19-37	1,224	738	60
State	2	C	29-19-37	1,351	779	308
State L	1	E	20-19-37	1,594	493	33
State	2	F	20-19-37	1,550	614	--------
State M	1	F	2-20-36	1,535	833	--------
State	2	J	13-20-36	1,669	1,031	--------
State O	1	B	30-19-37	1,529	1,242	--------
State	2	G	30-19-37	1,592	3,926	--------
Do	3	H	30-19-37	1,579	860	--------
Do	4	C	30-19-37	1,527	800	--------
State P	1	L	29-19-37	1,551	719	--------
State	2	M	29-19-37	1,546	758	--------
State Q	1	J	16-20-37	1,696	12,900	320
State	2	I	16-20-37	1,750	15,300	399
State R	1	K	29-19-37	1,459	1,600	510
State	2	N	29-19-37	1,385	1,380	130
State S	1	N	2-20-36	1,567	450	--------
State	2	M	2-20-36	1,456	500	104
State T	1	M	25-19-36	1,589	575	--------
State	2	K	25-19-36	1,581	763	180
Do	3	G	25-19-36	1,614	932	3,850
Do	4	C	25-19-36	1,307	6,138	56

Gas-oil ratio and water report—Continued

MONUMENT FIELD, DECEMBER 1938—Continued

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Amerada Petroleum Corporation—Con.						
State						
Do	5	G	20-19-37	1,163	2,698	--------
Do	6	B	20-19-37	1,169	4,660	36
Do	7	L	28-19-37	1,368	5,000	28
State U	1	E	32-19-37	1,557	1,144	--------
State	2	D	32-19-37	1,560	793	--------
State V	1	A	36-19-36	1,616	3,000	--------
State	2	B	36-19-36	1,618	7,240	--------
Do	3	H	36-19-36	1,620	565	--------
Do	4	G	36-19-36	1,618	5,000	--------
State X	1	L	16-20-37	1,756	412	--------
State Y	1	I	17-20-37	1,747	384	--------
State	2	J	17-20-37	1,747	612	--------
State Z	1	A	13-20-36	1,672	1,245	--------
State	2	H	13-20-36	1,720	676	--------
Weir	1	M	35-19-36	1,536	780	--------
Do	2	D	2-20-36	1,494	5,198	--------
Do	3	L	35-19-36	1,437	6,020	--------
Do	4	F	35-19-36	1,446	12,860	--------
Do	5	E	35-19-36	1,390	16,080	--------
Do	6	C	35-19-36	1,452	2,000	--------
Do	8	D	35-19-36	1,382	66,800	500
State A	1	L	25-19-36	153	6,969	--------
State B	1	G	26-19-36	1,260	16,000	--------
State	2	F	26-19-36	1,264	2,900	--------
Anderson Prichard Oil Corporation:						
Britt	1	F	7-20-37	1,860	604	--------
Do	2	C	7-20-37	1,795	899	--------
Do	3	G	7-20-37	1,790	545	--------
Do	4	B	7-20-37	1,790	663	--------
Do	5	K	7-20-37	1,781	604	--------
Do	6	N	7-20-37	1,789	722	--------
Do	7	J	7-20-37	1,801	2,189	--------
Do	8	O	7-20-37	1,774	603	--------
Britt A	1	N	6-20-36	1,801	540	--------
Britt	2	K	6-20-36	1,801	539	--------
Britt B	1	N	5-20-36	488	13,468	--------
State A	1	F	2-20-36	1,811	6,500	--------
Atlantic Refining Co.: Crutchfield	1	I	32-19-37	1,637	1,369	--------
Barnsdall Oil Co :						
Cooper	1	A	12-20-36	1,613	500	--------
Do	2	E	7-20-37	1,643	450	--------
Do	3	D	7-20-37	1,613	1,300	--------
Do	4	H	12-20-36	1,612	900	--------
Do	5	L	12-20-36	1,612	500	--------
Do	6	M	7-20-37	1,612	947	--------
Do	7	L	7-20-37	1,612	450	--------
Do	8	M	12-20-36	1,612	500	--------
Cities Service Oil Co.:						
Laughlin	1	J	5-20-37	1,610	4,440	--------
Do	2	O	5-20-37	1,612	7,520	--------
Do	3	P	5-20-37	1,643	3,610	--------
Do	4	A	8-20-37	1,608	3,560	--------
Persons	1	P	27-19-36	----------	2,150	12 GL
State E	1	E	30-19-37	1,634	4,000	--------
State	2	N	30-19-37	1,631	2,650	--------
Do	3	L	30-19-37	1,643	2,680	--------
Do	4	M	30-19-37	1,632	2,930	--------
Continental Oil Co.:						
Britt A	1	M	6-20-37	800	1,562	--------
Britt	2	L	6-20-37	2,676	6,322	--------
Britt B	1	C	8-20-37	1,840	7,162	--------
Britt	1	M	10-20-37	1,736	959	592
Do	1	D	15-20-37	2,687	1,008	1,152
Do	2	E	15-20-37	1,586	672	--------
Do	3	L	15-20-37	1,139	8,500	--------
Britt A	1	C	18-20-37	2,048	1,154	--------
Britt B	1	D	18-20-37	2,053	772	--------
Britt	2	F	18-20-37	2,001	1,391	--------
Do	3	K	18-20-37	1,896	1,635	--------
Do	4	I	18-20-37	1,869	1,514	--------
Do	5	E	18-20-37	2,024	1,383	165
Do	6	P	18-20-37	1,843	872	34
Do	7	O	18-20-37	1,833	2,446	--------
Reed A	1	A	3-20-36	1,909	10,950	--------
Reed	2	K	3-20-36	1,785	4,934	37
Do	3	I	3-20-36	1,913	4,101	--------
Do	4	P	3-20-36	1,942	3,952	60
Do	5	G	3-20-36	1,972	3,529	4,115

Gas-oil ratio and water report—Continued

MONUMENT FIELD, DECEMBER 1938—Continued

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Continental Oil Co.—Continued.						
Reed B	1	A	23-20-36	1,499	1,392	
Reed	4	B	23-20-36	1,593	3,279	
Sanderson A	1	I	11-20-36	2,277	1,351	
Sanderson	2	J	11-20-36	2,244	1,287	
Do	3	P	11-20-36	2,304	2,418	
Do	4	O	11-20-36	2,285	2,231	
Do	5	N	11-20-36	2,271	2,708	
Do	6	M	11-20-36	2,430	1,571	215
Sanderson A	1	A	14-20-36	2,207	2,461	
Sanderson	2	B	14-20-36	2,309	1,301	
Do	3	H	14-20-36	2,304	2,845	
Do	4	I	14-20-36	2,339	1,098	
Do	5	C	14-20-36	2,332	1,332	
Do	6	I	14-20-36	2,315	809	
Do	7	G	14-20-36	2,343	1,126	
Do	8	J	14-20-36	2,342	957	
Do	9	F	14-20-36	2,262	904	
Sanderson B	1	O	14-20-36	1,529	835	
Sanderson	2	K	14-20-36	1,576	1,116	
Sanderson B	1	A	10-20-36	1,558	2,913	100
Sanderson	2	H	10-20-36	1,301	1,055	656
Do	3	I	10-20-36	1,200	1,216	100
Do	4	P	10-20-36	1,292	1,868	641
State A	1	I	7-19-37	893	400	GL
State	1	L	19-19-37	1,605	742	
Do	1	H	26-19-36	433	2,689	31
Do	2	L	26-19-36	558	1,024	62
Do	3	E	26-19-36	396	2,887	31
Do	1	M	17-19-37	1,595	1,235	
Do	2	N	17-19-37	1,315	1,378	
Do	3	L	17-19-37	1,591	1,199	
Do	4	K	17-19-37	1,601	1,085	
Do	5	G	17-19-37	1,561	1,006	
Do	6	B	17-19-37	1,564	2,914	
State C	1	C	30-19-37	1,602	2,183	
State	2	D	30-19-37	1,600	1,871	
Do	3	F	30-19-37	1,611	2,085	
Do	4	E	30-19-37	1,602	2,301	
State C	2	E	16-20-37			
Ennishope Oil Corporation:						
Wulff State	1	D	17-20-37	1,651	1,275	
Wulff	2	F	17-20-37	1,651	700	
General Crude Oil Co.: State	1	D	16-20-37	1,747		63
Great Western Prod., Inc.: No report.						
Gulf Oil Corporation:						
Anderson	1	O	8-20-37	1,599	405	
Do	2	O	17-20-37	1,669	4,339	
Do	3	P	8-20-37	1,628	414	
Do	4	B	17-20-37	1,716	9,717	
Do	5	F	17-20-37	1,649	468	
Do	6	A	17-20-37	1,612	654	
Do	7	H	17-20-37	1,602	561	
Do	8	G	17-20-37	1,610	2,928	
Bates	1	P	26-19-36	1,647	1,750	
Bell G	1	P	13-20-36	1,660	682	
Bell	2	O	13-20-36	1,455	862	
Culp	1	C	19-19-37	1,665	611	
Do	2	E	19-19-37	1,703	736	
Do	3	F	19-19-37	1,642	793	
Do	4	G	19-19-37	1,598	779	
Do	5	H	19-19-37	1,563	715	
Do	6	B	19-19-37	1,592	701	
Do	7	A	19-19-37	1,558	793	
Culp B	1	J	31-19-37	1,560	869	
Culp	2	I	31-19-37	1,553	870	
Do	3	P	31-19-37	1,627	1,089	
Graham St. B	1	P	2-20-36	1,729	498	
Graham St.	2	I	2-20-36	1,664	9,803	
Graham St. C	1	J	24-19-36	1,451	2,198	
Graham St.	2	B	24-19-36	1,246	2,743	
Do	3	G	24-19-36	1,607	2,026	
Do	4	O	24-19-36	1,213	2,638	
Do	5	B	25-19-36	1,548	810	
Do	6	O	25-19-36	1,676	648	
Do	7	G	25-19-36	1,444	827	
Do	8	J	25-19-36	1,646	660	
Graham St. D	1	O	19-19-37	1,675	946	
Graham St.	2	P	19-19-37	1,570	947	
Graham St. F	1	P	36-19-36	1,676	1,007	

Gas-oil ratio and waetr report—Continued

MONUMENT FIELD, DECEMBER 1938—Continued

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Gulf Oil Corporation—Corporation.						
Graham St	2	I	36-19-36	1,638	2,051	--------
Do	3	J	36-19-36	1,630	1,111	--------
Do	4	O	36-19-36	1,621	1,069	--------
Graham St. G	1	O	17-19-37	1,716	1,886	--------
Graham St	2	G	17-19-37	1,727	1,578	--------
Graham St. H	1	L	13-20-36	1,480	1,424	--------
Graham St	2	M	13-20-36	1,682	4,929	--------
Hatchett	1	I	33-19-37	731	3,754	31
Do	2	E	33-19-37	776	1,481	309 P
Kutter A	1	O	20-19-37	1,685	2,034	34
Kutter	2	J	20-19-37	1,437	2,614	153
Kutter B	1	M	21-19-37	1,377	1,777	--------
Kutter	2	E	28-19-37	1,188	2,250	139
Do	3	D	28-19-37	1,089	9,250	--------
Kutter C	1	H	18-19-37	1,637	1,730	--------
Kutter	2	G	18-19-37	1,646	2,788	--------
Kutter C	3	F	18-19-37	1,234	2,926	--------
Kutter	4	E	18-19-37	1,351	2,750	--------
Kutter D	1	M	8-19-37	1,732	1,538	--------
Kyte	1	P	7-19-37	1,656	1,346	79
Do	2	O	7-19-37	3,203	1,250	507
Luthy State	1	E	29-19-37	1,638	698	--------
Luthy	2	D	29-19-37	1,684	673	--------
Martin	1	I	25-19-36	1,744	3,584	--------
Do	2	P	25-19-36	1,831	9,814	--------
Love	1	O	32-19-37	1,623	765	28
Do	2	P	32-19-37	1,583	736	53
Matthews	1	O	6-20-37	1,727	3,703	--------
Do	2	J	6-20-37	1,780	15,740	121
Do	3	P	6-20-37	1,751	15,849	123
Do	4	I	6-20-37	1,347	3,250	--------
Orcutt D	1	B	13-20-36	1,740	533	--------
Orcutt	2	H	13-20-36	1,396	588	--------
Phillips	1	B	31-19-37	1,613	766	--------
Do	2	A	31-19-37	1,683	826	--------
Shipp B	1	L	8-19-37	1,179	2,750	--------
Smith	1	H	34-19-36	1,603	37,254	97
Do	2	A	34-19-36	1,744	20,754	449
Weir	1	A	35-19-36	1,115	39,142	103
Weir B	1	J	26-19-36	204	4,000	47
Williams	1	J	29-19-37	1,679	1,261	33
Do	2	O	29-19-37	1,340	1,230	--------
Do	3	P	29-19-37	1,353	913	--------
Whitmire	1	G	8-20-37	1,893	17,142	77
Do	2	B	8-20-37	1,593	4,906	246
Do	3	F	8-20-37	1,696	14,720	70
Do	4	H	8-20-37	1,625	24,561	64
Humble Oil Rfg. Co.:						
Laughlin	1	G	4-20-37	1,393	973	88 P
Do	2	M	4-20-37	1,706	1,007	--------
Do	3	N	4-20-37	1,812	1,148	--------
Do	4	O	4-20-37	1,486	1,344	--------
Do	5	J	4-20-37	1,440	2,512	--------
State D	1	J	20-19-37	1,093	2,273	31 P
State	2	A	20-19-37	1,093	1,911	41 P
State E	1	L	21-19-37	1,329	1,457	64
State F	1	K	17-20-37	1,725	1,941	--------
State	2	N	17-20-37	1,818	1,370	--------
Do	3	L	17-20-37	1,446	3,820	--------
Do	4	M	17-20-37	1,384	3,404	--------
Ohio Oil Co.:						
Barber	1	M	32-19-37	1,543	2,500	--------
Do	2	C	5-20-37	1,637	2,400	--------
Do	3	K	32-19-37	1,574	2,451	--------
Do	4	I	5-20-37	1,573	2,480	--------
Do	5	D	5-20-37	1,480	2,536	--------
Do	6	L	5-20-37	1,512	16,101	--------
Do	7	F	5-20-37	1,605	2,300	--------
Do	8	E	5-20-37	1,605	15,166	--------
Laughlin	1	E	9-20-37	1,796	492	--------
Do	2	F	9-20-37	1,736	488	--------
Do	3	C	9-20-37	1,377	492	--------
Do	4	H	9-20-37	1,377	496	--------
St. Elliott	1	J	30-19-37	1,604	788	--------
Do	2	I	30-19-37	1,604	788	--------
Do	3	G	30-19-37	1,604	788	--------
Do	4	H	30-19-37	1,605	757	--------

Gas-oil ratio and water report—Continued

MONUMENT FIELD, DECEMBER 1938—Continued

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Ohio Oil Co.—Continued.						
St. Hansen	1	B	16-20-37	1,792	1,238	--------
Do	2	G	16-20-37	1,793	1,237	--------
Do	3	A	16-20-37	1,758	1,231	--------
Do	4	N	16-20-37	1,349	1,249	--------
St. McGrail	1	N	26-19-36	1,453	1,770	33
Do	2	K	26-19-36	1,221	1,760	28
Do	3	G	27-19-36	1,222	320	-------- GL
Illinois Oil Co.: Crutchfield	1	H	32-19-37	1,532	4,000	--------
Oil Well Drilling Co.:						
Klingsmith	1	P	20-19-37	1,837	1,180	--------
State A	1	C	29-19-37	1,502	1,500	--------
State	2	B	29-19-37	1,502	17,000	--------
Wood A	1	C	16-20-37	1,842	550	--------
Wood	2	F	16-20-37	1,842	650	--------
Phillips Petroleum Co.:						
Culp	1	D	19-19-37	1,533	2,597	--------
Hobbs	1	K	18-20-37	1,373	1,777	--------
Do	2	L	18-20-37	1,729	445	--------
Do	3	N	18-20-37	1,622	604	--------
Land Office	1	K	19-19-37	1,633	360	--------
Mexico	1	A	18-20-37	1,607	2,839	--------
Do	2	G	18-20-37	1,607	624	--------
Do	3	H	18-20-37	1,607	511	--------
Patsy	1	B	18-20-37	1,674	541	--------
Repollo Oil Co.:						
Barber	1	H	7-20-37	1,627	3,586	--------
Do	2	A	7-20-37	1,658	3,660	205
Do	3	L	8-20-37	1,627	4,100	--------
Do	4	D	8-20-37	1,596	8,400	--------
Do	5	P	7-20-37	1,695	4,142	--------
Do	6	I	7-20-37	1,627	4,162	--------
Do	7	E	8-20-37	1,596	13,900	--------
Bordages	1	M	20-19-37	1,230	430	27 P
Byrd	1	B	11-20-36	1,534	10,290	--------
Do	2	G	11-20-36	1,547	10,604	--------
W. P. Byrd	1	C	11-20-36	1,565	4,910	--------
Do	2	D	11-20-36	1,565	5,112	372
Do	3	K	11-20-36	1,565	5,110	--------
Do	4	P	11-20-36	1,565	5,130	--------
Do	5	L	11-20-36	1,589	5,156	425
Do	6	M	11-20-36	1,565	5,127	--------
Phillips A	1	M	31-19-37	1,627	2,512	--------
Phillips	2	N	31-19-37	1,658	3,310	--------
Do	3	K	31-19-37	1,647	3,425	--------
Do	4	L	31-19-37	1,647	20,420	--------
Phillips B	1	C	31-19-37	1,534	2,200	--------
Phillips	2	D	31-19-37	1,627	1,840	--------
Do	3	F	31-19-37	1,596	1,710	--------
Do	4	E	31-19-37	1,622	1,120	--------
Roach	1	D	21-20-37	1,683	1,460	--------
Do	2	C	21-20-37	1,627	1,336	--------
Williams	1	A	33-19-37	324	240	127
Do	2	O	33-19-37	1,628	680	280
Republic Products Co.:						
Maveety	1	N	35-19-36	3,082	9,687	--------
Do	2	K	35-19-36		13,243	--------
Shell Petroleum Corporation:						
Cooper A	1	B	4-20-37	1,640	1,020	--------
Cooper B	1	C	4-20-37	1,765	666	--------
Cooper	2	D	4-20-37	1,769	746	--------
Do	3	E	4-20-37	1,768	688	--------
Foster	1	P	34-19-36	1,652	9,200	--------
State A	1	P	35-19-36	1,220	775	217
State B	1	E	36-19-36	1,483	1,565	--------
State	2	D	36-19-36	1,482	2,255	--------
Do	3	C	36-19-36	1,587	1,960	--------
Do	4	F	36-19-36	1,676	2,415	--------
State C	1	A	24-19-36	1,191	--------	186
State	2	H	24-19-36	1,546	1,275	1,581
State D	1	J	19-19-37	1,635	690	--------
State	2	I	19-19-37	1,603	718	--------
State E	1	C	13-20-36	1,727	710	--------
State	2	D	13-20-36	1,717	710	--------
Do	3	F	13-20-36	1,717	720	--------
Do	4	E	13-20-36	1,717	575	--------
State F	1	I	29-19-37	1,507	1,070	--------
State G	1	M	16-20-37	1,749	630	--------
State H	1	I	20-19-37	1,534	3,150	62

Gas-oil ratio and water report—Continued

MONUMENT FIELD, DECEMBER 1938—Continued

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Skelly Oil Co.:						
Christmas	1	M	25-19-36	384	434	
Mon State	1	P	13-19-36	853	1,946	203 P
Do	2	I	13-19-36	852	1,971	436 P
State D	1	P	1-20-36	1,662	1,053	
State	2	I	1-20-36	1,598	1,057	
State E	1	H	29-19-37	1,280	902	
State	2	A	29-19-37	1,511	902	
State F	1	P	17-20-37	1,657	500	
State	2	O	17-20-37	1,623	650	
Van Etten	1	L	9-20-37	1,677	322	
Do	2	M	9-20-37	1,677	322	
Do	3	N	9-20-37	1,677	322	
Do	4	K	9-20-37	1,676	322	
Do	5	J	9-20-37	1,676	322	
Do	6	O	9-20-37	1,676	322	
Do	7	I	9-20-37	1,676	322	
Do	8	P	9-20-37	1,676	322	
Stanolind Oil & Gas Co.:						
Gilluly A	1	M	8-20-37	1,641	376	
Do	2	A	34-20-36	1,646	383	
Gilluly	4	B	34-20-36	987		
Do	9	C	34-20-36	1,554	2,828	
Do	12	D	34-20-36	1,554	666	
Gilluly B	2	B	21-20-36		57,062	
Sun Oil Co.:						
Barr	1	O	24-19-36	573	10,450	
Laughlin	1	L	4-20-37	1,638	446	
Do	2	I	5-20-37	1,631	530	
Maveety	1	I	35-19-36	1,442	10,840	
Do	2	H	35-19-36	1,466	6,340	
Do	3	O	35-19-36	1,169	2,950	91
Do	4	J	35-19-36	1,352	18,440	
Do	5	G	35-19-36	1,221	9,910	
Do	6	B	35-19-36	188	2,260	
State	1	A	25-19-36	1,581	1,496	
Do	2	H	25-19-36	1,597	3,815	
Superior Oil Co.:						
State	1	A	2-20-36	1,291		
Do	2	B	2-20-36	1,941		
Do	3	H	2-20-36	1,540		
Do	4	G	2-20-36	1,399		
Do	5	I	13-20-36	1,675		
The Texas Co.:						
Am. Nat. Ins	1	C	18-19-37	1,228	1,790	
Cook	1	A	32-19-37	1,233	943	
Cooper	1	B	5-20-37	1,631	2,118	
Do	2	A	5-20-37	1,621	1,024	
Do	3	G	5-20-37	1,614	1,113	
Do	4	H	5-20-37	1,612	886	
Keohane	1	A	18-19-37	1,605	740	
Keohane B	1	B	18-19-37	1,291	1,217	
Mattern	1	L	20-19-37	1,435	488	
Do	2	H	20-19-37	1,476	1,079	
Do	3	N	20-19-37	1,245	1,103	
Do	4	K	29-19-37	1,282	991	
Phillips	1	D	6-20-37	1,633	1,499	
Do	2	C	6-20-37	1,629	1,090	
Do	3	E	6-20-37	1,623	2,187	
Do	4	F	6-20-37	1,642	2,134	
Saunders	1	N	18-19-37	1,564	6,736	
Do	2	C	18-19-37	1,603	2,152	
Do	3	J	18-19-37	1,633	4,312	
Do	4	K	18-19-37	1,550	2,840	
St. Lieu Land	3	A	20-20-37	1,536	752	
Do	6	B	20-20-37	1,545	605	
Do	7	C	20-20-37	1,558	1,175	
Do	11	D	20-20-37	1,497	1,126	270
State E	1	M	1-20-36	1,690	445	
State	2	N	1-20-37	1,690	440	119
Do	3	L	1-20-37	1,693	437	
Do	4	K	1-20-37	1,688	507	
State C University	5	A	19-20-37	1,297	2,449	
State	6	B	19-20-37	1,225	1,158	
State F	1	J	24-19-36	1,462	1,208	
State	2	P	24-19-36	1,466	1,290	
State G	1	N	19-19-37	1,604	447	
State	2	M	19-19-37	1,604	404	
State J	1	K	24-19-36	1,159	3,210	
State	2	N	24-19-36	552	9,875	215

Gas-oil ratio and water report—Continued

MONUMENT FIELD, DECEMBER 1938—Continued

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
The Texas Co.—Continued.						
State K	1	P	18-19-37	1,676	1,648	--------
State	2	K	18-19-37	1,623	750	--------
State University	10	D	19-20-37	1,343	3,222	--------
Weir	1	E	25-19-36	128	35,250	--------
Do	2	N	23-19-36	278	7,110	18
Tidewater Associated Oil Co.:						
Anderson	1	N	8-20-37	1,801	5,507	323
Do	2	I	8-20-37	1,784	704	--------
Laughlin	1	F	4-20-37	1,758	577	--------
Do	2	K	4-20-37	1,767	463	--------
State F	1	D	20-19-37	1,501	587	--------
State	2	C	20-19-37	1,611	897	--------
State H	1	L	32-19-37	1,543	1,091	--------
State	2	K	32-19-37	1,451	968	--------
State I	1	N	16-20-37	1,774	1,631	--------
State	2	K	16-20-37	1,778	1,631	--------
State J	1	E	17-19-37	1,575	3,103	--------
State	2	D	17-19-37	1,608	1,225	--------
Do	3	F	17-19-37	1,159	1,709	52
Do	4	O	17-19-37	1,573	1,308	--------
State K	1	K	13-20-36	1,525	1,254	68
State	2	N	13-20-36	1,502	5,111	--------
Turner: State	1	L	2-20-36	1,480	4,568	--------
Two States:						
Etcheverry	1	G	10-20-36	1,014	14,772	--------
Do	2	J	10-20-36	338	70,900	--------

Vacuum field, completion reports, January 1939

	Casing and tubing record	Sax cement
Company, Shell:		
Lease: State V No. 2	Size, 8⅝; depth, 1,676	600
Location: 27-17-35	Size, 5½; depth, 4,348	275
Elevation: 3,633	Size,—; depth, —;	----------
Total depth: 4,680	Tubing size, 2; tubing depth, 4,676	----------
Completion date: Jan. 23, 1939	Packer depth,—	----------
Initial production test: 156/5 hr	Test after acid or shot	----------
Company, Phillips:		
Lease: Santa Fe No. 22	Size, 9⅝; depth, 1,642	875
Location: 26-17-35	Size, 7; depth, 4,173	400
Elevation: 3,919	Size, —; depth, —;	----------
Total depth: 4,528	Tubing size, 2; tubing depth, 4,525	----------
Completion date: Jan. 20, 1939	Packer depth,—	----------
Initial production test: 257/7 hr	Test after acid or shot	----------
Company, Phillips:		
Lease: Santa Fe No. 13	Size, 9⅝; depth, 1,664	875
Location: 28-17-35	Size, 7; depth 4,260	400
Elevation: 3,962	Size, —; depth, —	----------
Total depth: 4695	Tubing size, 2; tubing depth, 4,693	----------
Completion date: Dec. 20, 1938	Packer depth, —	----------
Initial production test: 150/day	Test after acid or shot, 182/day	----------
Company, Ohio:		
Lease: McCallister No. 4	Size, 9⅝; depth, 497	200
Location 25-17-34	Size, 7; depth, 4,099	700
Elevation: 4,019	Size, —: depth, —	----------
Total depth: 4,710	Tubing size, —; tubing depth, —	----------
Completion date Jan. 28, 1939	Packer depth, —	----------
Initial production test 35/hr	Test after acid or shot	----------
Company, Humble:		
Lease: State J No. 2	Size, 10¾; depth, 221	125
Location: 19-17-35	Size, 7⅝; depth 1,692	400
Elevation: 3,995	Size, 5½; depth, 4365	275
Total depth: 4,765	Tubing size, 2; tubing depth, 4,739	----------
Completion date: Jan. 28, 1939	Packer depth, —	----------
Initial production test: ½/hr	Test after acid or shot, 12/hr	----------
Company, Continental:		
Lease: State H No. 4	Size, 10¾; depth, 300	225
Location: 35-17-34	Size, 7⅝; depth, 1,554	425
Elevation: 4,017	Size, 5½; depth, 4,151	425
Total depth: 4,710	Tubing size, 2; tubing depth	----------
Completion date: Jan. 30, 1939	Packer dept, —	----------
Initial production test: 112/5 hr	Test after acid or shot	----------

Vacuum field, completion reports, January 1939—Continued

	Casing and tubing record	Sax cement
Company, Standard of Texas:		
Lease: State No. 2 "3"	Size, 13⅜ depth, 270	400
Location: 32–17–35	Size, 9⅝;; depth 1591	615
Elevation: 3,974	Size, 7; depth, 4,203	146
Total depth: 4,651	Tubing size, 2; tubing depth, 4641	
Completion date: Jan. 15, 1939	Packer depth, —	
Initial production test	Test after acid or shot, 18/hr	
Company, Magnolia:		
Lease: Bridges No. 21	Size, 10¾; depth, 864	220
Location: 23–17–34	Size, 7; depth, 4,350	220
Elevation: 4,028	Size, —; depth, —;	
Total depth: 4,660	Tubing size, 2½; tubing depth, 4,658	
Completion date: Dec. 31, 1938	Packer depth,—	
Initial production test: 351/1 hr	Test after acid or shot	
Company, Magnolia:		
Lease: State M No. 3	Size, 9⅝; depth, 1,600	325
Location: 34–17–35	Size, 7; depth, 4,210	220
Elevation: 3,943	Size, —; depth, —	
Total depth: 4,682	Tubing size, 2½; tubing depth, 4,680	
Completion date: Jan. 4, 1939	Packer depth, —;	
Initial production test: 480/5¾	Test after acid or shot	
Company, Getty:		
Lease: State F No. 4	Size, 13; depth, 268	200
Location: 36–17–34	Size, 9⅝; depth, 1,526	300
Elevation: 4,013	Size, 7; depth, 4,094	300
Total depth: 4,700	Tubing size, 2; tubing depth, 4,699	
Completion date: Jan. 3, 1939	Packer depth, —;	
Initial production test: 1,356/day	Test after acid or shot	
Company, Texas:		
Lease: State R No. 3	Size, 7⅝; depth, 1,533	300
Location: 6–18–35	Size, 5½; depth, 4,102	200
Elevation: 3,970	Size, —; depth, —	
Total depth: 4,710	Tubing size, —; tubing depth,—	
Completion date: Jan. 12, 1939	Packer depth, —	
Initial production test: 40/8 hr	Test after acid or shot	
Company, Magnolia:		
Lease: Bridges No. 22	Size, 10¾; depth, 828	220
Location: 24–17–34	Size, 7; depth, 4,278	220
Elevation: 4,016	Size,—; depth, —	
Total depth: 4,700	Tubing size, 2½; tubing depth, 4,698	
Completion date: Jan. 18, 1939	Packer depth,—	
Initial production test: 48/8 hr	Test after acid or shot	

Gas-oil ratio and water report, Vacuum field, December 1938

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Amerada Petroleum Corporation:						
State V A	1	N	23–17–34	1,740	380	
State	2	L	23–17–34	1,404	1,140	
Do	3	K	23–17–34	1,503	625	
Do	5	L	22–17–34			P
State V B	1A	K	36–17–34	1,828	532	
Cities Service Oil Co.: State K	1	G	27–17–35	1,541	84	
Continental Oil Co.:						
State	1	H	35–17–34	1,615	741	
Do	2	A	35–17–34	1,638	563	
Do	3	B	35–17–34	798	682	
Drilling Exploration Co.: State	1	M	22–17–35	1,543	500	
Getty Oil Co.:						
State F	1	A	36–17–34	1,735	535	
State	2	B	36–17–34	1,735	524	
Do	3	D	36–17–34	1,560	527	
Humble Oil & Refining Co.: State J	1	M	19–17–35	1,237	703	
Magnolia Petroleum Co.:						
State G	1	B	24–17–34	1,731	820	P
State	2	A	24–17–34	438	950	
State H	1	D	31–17–35	1,429	1,140	4
State I	1	L	36–17–34	1,826	1,210	P
State J	1	L	22–17–34	1,647	1,425	3
State K	1	M	31–17–35	1,450	1,700	
State	2	I	31–17–35	1,461	1,695	
Do	3	P	31–17–35	1,695	1,540	
State L	1	N	21–17–35	1,520	1,750	
State	2	M	21–17–35	1,566	1,820	
State M	1	C	34–17–35	950	1,325	

Gas-oil ratio and water report, Vacuum field, December 1938—Continued

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
Magnolia Petroleum Co.—Continued.						
State	2	D	34-17-35	1,380	1,250	--------
State N	1	E	19-17-35	1,317	1,421	5
St. Bridges	1	E	13-17-34	1,785	1,325	3
Do	2	O	14-18-34	1,544	1,017	--------
Do	3	J	23-17-34	1,588	975	--------
Do	4	B	26-17-34	2,239	2,860	--------
Do	5	C	26-17-34	1,739	1,310	7
Do	6	E	23-17-34	1,331	845	4 P
Do	8	J	23-17-34	1,688	1,865	5
Do	10	F	23-17-34	1,311	920	3
Do	12	P	26-17-34	1,677	975	--------
Do	14	G	25-17-34	530	1,017	4
Do	15	O	26-17-34	1,135	950	3
Do	16	B	25-17-34	488	940	3
Do	17	A	25-17-34	569	1,270	2 P
Do	18	F	24-17-34	----------	1,520	--------
Do	19	D	24-17-34	----------	7,946	--------
Do	20	E	24-17-34	----------	980	--------
Ohio Oil Co.:						
St. Bridges	1	A	20-17-34	1,537	220	-------- P
St. McCallister	1	N	25-17-34	1,686	520	--------
Do	2	K	25-17-34	1,687	520	--------
St. Staplin	1	M	30-17-35	1,289	410	--------
St. Warn	1	F	31-17-35	1,466	420	--------
Do	2	K	31-17-35	1,467	420	--------
St. Warn "2"	1	D	6-18-35	1,789	520	--------
St. Warn	2	C	6-18-35	1,789	520	--------
Phillips Petroleum Co.:						
Hale State	1	I	35-17-34	1,557	646	--------
Do	2	K	35-17-34	776	608	--------
Mable	1	E	35-17-34	258	430	--------
Santa Fe	1	E	31-17-35	1,539	311	--------
Do	2	O	30-17-35	755	356	--------
Do	3	E	5-18-35	1,569	537	--------
Do	4	O	31-17-35	1,540	207	--------
Do	5	L	31-17-35	1,541	588	--------
Do	6	O	21-17-35	1,539	1,330	--------
Do	7	N	27-17-35	1,535	474	--------
Do	8	D	5-18-35	1,569	513	--------
Do	9	P	21-17-35	1,538	617	--------
Do	10	C	22-17-34	996	488	--------
Do	11	K	26-17-35	1,582	361	--------
Repollo Oil Co.: State "197"	1	P	6-17-34	1,603	720	--------
Republic Prod. Co.:						
State B	1	L	32-17-35	3,316	493	--------
State	2	M	32-17-35		493	--------
Shell Petroleum Corporation:						
State A	1	B	31-17-35	1,165	528	--------
State	2	G	31-17-35	1,165	432	--------
Do	3	H	31-17-35	863	440	--------
Do	4	A	31-17-35	863	326	--------
State B	1	P	30-17-35	765	364	--------
State	2	I	30-17-35	426	288	--------
State D	1	M	31-17-35	912	170	--------
State E	1	N	31-17-35	1,007	423	--------
State G	1	P	22-17-35	897	2,590	--------
State H	1	L	29-17-35	445	389	--------
Swigart	1	I	25-17-34	1,234	496	--------
Skelly Oil Co.: State J	1	C	31-17-35	1,564	528	--------
The Texas Co.:						
State D	2	E	27-17-34	194	361	-------- P
State L	1	G	1-18-34	1,488	6,760	--------
State	2	A	1-18-34	1,419	1,390	--------
State M	1	F	1-18-34	1,304	1,060	--------
State N	1	M	30-17-35	1,081	868	-------- GL
State	2	L	30-17-35	1,150	950	-------- GL
State O	1	E	36-17-34	1,689	690	--------
State	2	H	36-17-34	1,603	890	--------
Do	3	G	36-17-34	1,689	810	--------
Do	4	I	36-17-34	1,789	615	--------
Do	5	F	36-17-34	1,689	700	--------
State O	6	J	36-17-34	1,689	507	--------
State	7	P	36-17-34	1,789	615	--------
Do	8	M	36-17-34	1,789	880	--------
Do	9	N	36-17-34	1,789	785	--------
State Q	1	P	25-17-34	1,536	515	--------
State	2	O	25-17-34	1,559	810	--------
Do	3	J	25-17-34	1,498	750	-------- GL
State R	1	A	6-18-35	1,070	760	--------
State	2	B	6-18-35	1,070	1,250	--------

Gas-oil ratio and water report, Vacuum field, December 1938—Continued

Company, lease	Well	Unit	Section, township, and range	Oil production	Gas-oil ratio	Water
The Texas Co.—Continued.						
State S	1	L	35–17–34	1,823	781	
State T	1	H	25–17–34		1,780	GL
State U	1	A	2–18–34		780	
State V	1	C	34–17–34		450	
State W	1	O	13–17–34		750	GL
Standard Oil Co. of Texas:						
State "3"	1	E	32–17–35	1,254	400	P
State "4"	1	K	27–17–35	3,962	1,000	8
State	2	O	27–17–35		750	8
State "5"	1	D	27–17–35	1,541	500	24
State	2	F	27–17–35		500	16
Westmount Oil Co.: State	1	F	30–17–35	438	360	

Statement of pipe-line runs by fields, and by companies, December 1938

ARTESIA AREA

Barnsdall Oil Co	3,640
Brainard	1,111
Brown, Eva	1,079
Carper	3,748
Carper-Quillan	1,955
Cities Service Oil Co	1,594
Cockburn & Williams	203
Danciger Oil & Refining Co	4,654
Dominion Oil & Gas Co	2,511
Eastland Oil & Refining Co	376
Emperor Oil Co	5,130
Etz Oil Co	2,300
Flint Products Co	8,649
Flynn, Welch & Yates	28,041
Franklin Petroleum Co	2,648
Fullerton Oil Co	3,667
Getty Oil Co	1,229
Grayburg Oil Co	17,107
Hartwell	1,132
Lackawana Products Co	404
Leonard	1,542
Levers & Carper	567
Maljamar Oil Co	15,469
Murchison & Closuit	4,053
Nash-Windfohr & Brown	17,833
Ohio Oil Co	1,646
Paton Bros	922
Premier Petroleum Co	8,196
Red Lakes Oil Co	4,229
Repollo Oil Co	27,329
Republic Products Co	5,913
Rotary Oil Co	208
Rudco Oil & Gas Co	1,272
Shugart et al	551
Skelly Oil Co	2,270
Solt, Walter	643
Three Sands Oil Co	300
Tigner, Etz & Keyes	194
W. K. Royalty Co	2,478
Welch, V. S., and Three Sands Oil Co	389
Western Drilling Co	2,358
Williams Petroleum Co	388
Total	189,928

AZTEC FIELD

Aztec	146

COOPER FIELD

Amerada Petroleum Corporation	7,867
Barnsdall Oil Co	1,505
Cities Service Oil Co	6,173
Continental Oil Co	16,804
General Crude Oil Co	8,723
Gulf Oil Corporation	6,218
Humble Oil & Refining Co	11,660
Kan Mex Oil Corporation	8,940
Phillips-Pure	20,555
Repollo Oil Co	7,697
Skelly Oil Co	10,655
Stanolind Oil & Gas Co	6,944
The Texas Co	12,273
Tidewater Associated Oil Co	1,084
Western Gas Co	2,615
Total	129,713

EAVES AREA

Continental Oil Co	11,787
Gulf Oil Corporation	1,412
Stanolind Oil & Gas Co	7,650
The Texas Co	1,228
Total	22,077

EUNICE AREA

Amerada Petroleum Corporation	10,615
Atlantic Refining Co	46,181
Cities Service Oil Co	17,092
Continental Oil Co	156,889
Devonian Oil Co	255
Elliott, L. E	1,598
Fields, Bert	3,435
Getty Oil Co	4,793
Gulf Oil Corporation	164,193
Humble Oil & Refining Co	60,514
Landreth Products Corporation	5,108

Statement of pipe-line runs by fields, and by companies, December 1938—Con.

EUNICE AREA—continued

Midcontinent Petroleum Corporation	6, 009
Murray et al	5, 713
Peerless Oil & Gas Co	481
Phillips Petroleum Co	6, 434
Repollo Oil Co	36, 650
Republic Products Co	1, 023
Rush, J. M	2, 998
Shell Petroleum Corporation	52, 603
Skelly Oil Co	19, 818
Standard Oil Co. of Texas	5, 917
Stanolind Oil & Gas Co	18, 683
Sun Oil Co	8, 228
The Texas Co	21, 250
Tidewater Associated Oil Co	20, 078
Two States Oil Co	8, 391
W. K. Royalty Co	2, 606
Total	696, 555

GETTY FIELD

Getty	1, 363

HARDY AREA

Amerada Petroleum Corporation	932
Barnsdall Oil Co	793
Clower	3, 076
Continental Oil Co	1, 546
Danglade-Clower	1, 219
Getty Oil Co	765
Gulf Oil Corporation	14, 913
Hershbach Drilling Co	351
Magnolia Petroleum Co	10, 124
Menke	1, 204
Ohio Oil Co	1, 561
Repollo Oil Co	4, 432
Rush, J. M	1, 053
Skelly Oil Co	5, 051
Southern Petroleum Exploration Co	4, 900
Stanolind Oil & Gas Co	10, 858
Sun Oil Co	351
The Texas Co	1, 872
Twin Oil Corporation	5, 766
Two States Oil Co	4, 745
Weiner	347
Total	75, 859

HOBBS FIELD

Amerada Petroleum Corporation	26, 923
Atlantic Refining Co	2, 996
Cities Service Oil Co	15, 443
Continental Oil Co	27, 886
Getty Oil Co	7, 329
Gulf Oil Corporation	41, 760
Humble Oil & Refining Co	21, 926
Landreth Products Corporation	5, 850
Magnolia Petroleum Co	975

HOBBS FIELD—continued

Midcontinent Petroleum Corporation	1, 132
Ohio Oil Co	14, 547
Oil Well Drilling Co	2, 526
Repollo Oil Co	8, 346
Semedan Oil Corporation	24, 217
Shell Petroleum Corporation	58, 915
Skelly Oil Co	12, 180
Standard Oil Co. of Texas	6, 458
Stanolind Oil & Gas Co	74, 562
Sun Oil Co	6, 536
The Texas Co	13, 769
Texas Pacific Coal & Oil Co	7, 188
Tidewater Associated Oil Co	10, 665
Two States Oil Co	1, 142
Walker Oil Corporation	1, 568
Total	394, 839

HOGBACK FIELD

Stanolind Oil & Gas Co	6, 110

JAL FIELD

Amerada Petroleum Corporation	1, 146
Anton Chico Development Co	1, 679
Barnsdall Oil Co	337
Cities Service Oil Co	4, 822
Continental Oil Co	4, 287
Gulf Oil Corporation	41
Humble Oil & Refining Co	1, 630
Johnson	687
Magnolia Petroleum Co	802
Phillips Petroleum Co	147
Repollo Oil Co	1, 535
Skelly Oil Co	1, 013
Southern Petroleum Exploration Co	1, 993
Stanolind Oil & Gas Co	346
The Texas Co	1, 881
Tidewater Associated Oil Co	1, 543
Total	23, 889

LANGLIE FIELD

Amerada Petroleum Corporation	4, 978
Anderson Prichard Oil Co	29, 102
Culbertson et al	30, 243
Eppenauer	3, 262
Gulf Oil Corporation	12, 544
Hershbach Drilling Co	1, 711
Humble Oil & Refining Co	2, 171
Italo Petroleum Co. of America	4, 704
Jal Natural Gas Co	1, 653
King, Carl B	3, 355
Leonard, Harry	7, 138
Plains Production Co	752
Repollo Oil Co	5, 709
Republic Production Co	1, 737
Skelly Oil Co	3, 250

Statement of pipe-line runs by fields, and by companies, December 1938—Con.

LANGLIE FIELD—continued

Stanolind Oil & Gas Co	3, 610
Sun Oil Co	6, 855
The Texas Co	6, 619
Tidewater Associated Oil Co	807
Two States Oil Co	1, 602
Wiener, Sam	3, 335
Woodley Petroleum Co	848
Total	135, 985

LYNCH FIELD

General Crude Oil Co	4, 738
The Texas Co	11, 002
Total	15, 740

LYNN AREA

Atlantic-Kirby	1, 527
Barnsdall Oil Co	3, 048
Continental Oil Co	3, 120
General Crude Oil Co	3, 358
Gulf Oil Corporation	3, 978
Republic Production Co	1, 533
Shell Petroleum Corporation	2, 365
The Texas Co	1, 634
Texas Pacific Coal & Oil Co	3, 394
Total	23, 957

MATTIX AREA

Addison Oil Co	4, 320
Amerada Petroleum Corporation	1, 243
Atlantic Refining Co	1, 494
Carter	679
Cities Service Oil Co	1, 198
Continental Oil Co	9, 573
Culbertson et al	3, 388
Dalport Oil Corporation	586
Gulf Oil Corporation	365
Humble Oil & Refining Co	4, 992
McLaughlin, C. T	642
Parker	3, 256
Phillips Petroleum Co	4, 689
Plains Prod. Co	9, 793
Repollo Oil Co	14, 226
Rushwold Oil Co	493
Schermerhorn Oil Co	3, 032
Shasta Oil Co	4, 407
Shell Petroleum Corporation	4, 786
Skelly Oil Co	4, 433
Stanolind Oil & Gas Co	6, 517
The Texas Co	6, 131
Weier Drilling Co	1, 535
Weiner	1, 536
Western Gas Co	357
Total	93, 671

MONUMENT FIELD

Amerada Petroleum Corporation	158, 366
Anderson Prichard Oil Co	20, 284
Atlantic Refining Co	1, 637
Barnsdall Oil Co	12, 929
Cities Service Oil Co	13, 013
Continental Oil Co	103, 192
Ennishope Oil Corporation	3, 302
General Crude Oil Co	1, 748
Great Western Prod. Co., Inc	1, 451
Gulf Oil Corporation	126, 453
Humble Oil & Refining Co	17, 818
Illinois Oil Co	1, 532
Ohio Oil Co	35, 810
Oil Well Drilling Co	8, 525
Phillips-Pure	14, 386
Repollo Oil Co	43, 351
Republic Prod. Co	3, 082
Shell Petroleum Corporation	33, 675
Skelly Oil Co	24, 831
Stanolind Oil & Gas Co	7, 382
Sun Oil Co	13, 858
Superior Oil Co	7, 848
The Texas Co	58, 468
Tidewater Associated Oil Co	25, 711
Two States Oil Co	1, 353
Turner, Fred	1, 480
Total	741, 485.

NORTH LYNCH AREA

Cities Service Oil Co	487
The Texas Co	734
Total	1, 221

PENROSE AREA

Amerada Petroleum Corporation	2, 927
Atlantic Refining Co	1, 039
Bradley Oil Co	2, 269
Carter	1, 588
Cities Service Oil Co	328
Cockburn	6, 941
Continental Oil Co	8, 493
Danglade-Clower	2, 416
Devonian Oil Co	950
Farrell	2, 896
Gulf Oil Corporation	17, 619
Humble Oil & Refining Co	12, 809
Landreth Prod. Corporation	6, 786
Magnolia Petroleum Co	5, 619
Midcontinent Petroleum Corporation	344
Ohio Oil Co	3, 675
Olean Petroleum Co	2, 312
Penrose-Rowan Oil Co	13, 030
Peters, Lem	8, 673
Repollo Oil Co	4, 560
Shell Petroleum Corporation	9, 133

Statement of pipe-line runs by fields, and by companies, December 1938—Con.

PENROSE AREA—continued

Skelly Oil Co	12, 293
Southern Petroleum Exporation Co	1, 713
Stanolind Oil & Gas Co	417
Stauffer, Mac	2, 673
Street et al	5, 062
The Texas Co	5, 465
Tidewater Associated Oil Co	2, 105
Twin Oil Corporation	4, 620
Two States Oil Co	2, 627
Total	152, 299

RATTLESNAKE FIELD

Continental Oil Co	11, 639

RHOADES AREA

Getty Oil Co	813
Great Western Oil Co	137
Ohio Oil Co	889
The Texas Co	1, 639
Total	3, 478

SKELLY AREA

Danglade-Clower	1, 580
Gulf Oil Corporation	786
Peters, Lem	1, 165
Repollo Oil Co	162
Samedan Oil Corporation	2, 375
Sindorf et al	1, 463
Skelly Oil Co	37, 070
Western Gas Co	1, 351
Total	45, 952

SOUTH EUNICE AREA

Cities Service Oil Co	18, 360
Continental Oil Co	9, 491
Gulf Oil Corporation	11, 102
Midcontinent Petroleum Corporation	7, 150
Ohio Oil Co	15, 532
Oil Well Drilling Co	2, 316
Repollo Oil Co	3, 071
Shell Petroleum Corporation	1, 447
Sun Oil Co	516
Texas Pacific Coal & Oil Co	19, 918
Tidewater Associated Oil Co	1, 522
Total	90, 425

TABLE MESA

Continental Oil Co	2, 225

VACUUM AREA

Amerada Petroleum Corporation	6, 476
Cities Service Oil Co	1, 541
Continental Oil Co	4, 050
Drilling Exploration Co	1, 542
Getty Oil Co	5, 030
Helmerich & Payne	538
Humble Oil & Refining Co	1, 237
Magnolia Petroleum Co	40, 658
Ohio Oil Co	12, 710
Phillips Petroleum Co	18, 038
Repollo Oil Co	1, 603
Republic Prod. Co	2, 316
Shell Petroleum Corporation	9, 742
Skelly Oil Co	1, 564
Standard Oil Co. of Texas	6, 767
The Texas Co	30, 714
Total	144, 965

WEST EUNICE

Wilson et al	1, 574

BARBER POOL

Wills	3, 148

SUMMARY

Artesia	189, 928
Aztec	146
Barber	3, 148
Cooper	129, 713
Eaves	22, 077
Eunice	696, 555
Getty	1, 363
Hardy	75, 859
Hobbs	394, 839
Hogback	6, 110
Jal	23, 889
Langlie	135, 985
Lynch	15, 740
Lynn	23, 957
Mattix	93, 671
Monument	741, 485
North Lynch	1, 221
Penrose	152, 299
Rattlesnake	11, 639
Rhoades	3, 478
Skelly	45, 952
South Eunice	90, 425
Table Mesa	2, 225
Vacuum	144, 965
West Eunice	1, 574
Total runs December 1938	3, 008, 243
Daily average runs, December	97, 040

Before the Oil Conservation Commission of the State of New Mexico. In the matter of the hearing called by the Oil Conservation Commission of the State of New Mexico for the purpose of considering: (*a*) The adoption of rules, regulations, and orders as may be necessary to make effective the prohibitions contained in section 13, chapter 72, laws of New Mexico, 1935, and for the issuance of certificates of clearance or tenders, or some other method, so that any person may have an opportunity to determine whether any contemplated transaction of sale or purchase or acquisition, or of transportation, refining, processing, or handling in any other way, involves illegal oil or illegal oil product. (*b*) The adoption of rules, regulations, and orders relating to the making up of shortage or back allowable. Case No. 15, Order No. 235

ORDER OF THE COMMISSION PROMULGATING RULES AND REGULATIONS GOVERNING THE ISSUANCE OF THE MONTHLY PRORATION SCHEDULE AND SUPPLEMENT THERETO, THE CERTIFICATE OF THE COMMISSION AUTHORIZING THE PRODUCTION, PURCHASE, AND TRANSPORTATION OF OIL PRODUCED UNDER SUCH SCHEDULES AND THE MAKING UP OF CERTAIN SHORTAGES

By the Commission:

This cause came on for hearing at 9 o'clock a. m. on the 21st day of July 1939, at Santa Fe, N. Mex.

Now, on this 13th day of January 1940, the commission having before it for consideration the evidence adduced at the hearing in said case and being fully advised in the premises, the commission adopted the order promulgating rules and regulations governing the issuance of the monthly proration schedule and supplement thereto, the certificate of the commission authorizing the production, purchase, and transportation of oil produced under such schedules and the making up of certain shortages, as follows:

1. The New Mexico Oil Conservation Commission will meet monthly, as soon as practicable after the announcement of the Bureau of Mines of the market demand for New Mexico, and at such meeting will consider the announcement of the Bureau of Mines and other evidence of market demand, and will determine the amount of oil to be produced from all pools in the State of New Mexico during the following calender month. The amount so determined will be allocated among the various pools in the State in accordance with existing regulations and among the various units in each pool, in accordance with the regulations governing each pool. The commission will thereupon issue a proration schedule which will specify the amount of oil each unit in the State may produce each day during the following calendar month, including shortages which may be made up and lawful overages. Allowables for wells completed between the 1st and 16th of each month shall be included in a supplementary proration schedule to the current monthly proration schedule. This supplement shall be issued on the 16th of each month. Such monthly proration schedule and such supplementary proration schedule shall each constitute the certificate of the commission authorizing thereunder: (1) The production of oil from the various units in accordance with such respective schedules; (2) the purchase of oil so produced by the purchasing companies; and (3) the transportation of oil so produced by the various pipe-line companies.

2. The monthly schedule provided for in paragraph (1) hereinabove shall show accrued shortages for 2 succeeding months, and such shortages shall be made up within the same period of time; or if overage occurs, which is unavoidable and lawful, then such overage should be compensated by reduced allowable within a like period of time. After 2 succeeding months, shortages shall be eliminated from the schedule unless the operator furnishes a written statement to show that he could not sell, or the pipe line would not run the allowable, or that remedial work for the purpose of conserving reservoir energy had caused the shortage.

3. Shortage incurred prior to October 1, 1939, due to lack of pipe-line connection or the inability to sell the allowable, shall be cumulative and allowed. Such shortages shall be shown in the cumulative column on the proration schedule and the amount of cumulative shortage authorized to be run shall be added to the current allowable and total shown as net allowable.

4. In no event should shortages when authorized be produced in such manner or in such daily amounts as to constitute waste.

For the purpose of taking under further advisement, the commission reserves herein for a supplemental order the matters in this case insofar as they relate to the transportation of oil and the products thereof by means other than by pipe line.

Done at Santa Fe, N. Mex., this 13th day of January 1940.

[SEAL] NEW MEXICO OIL CONSERVATION COMMISSION,
By FRANK WORDEN,
Commissioner of Public Lands.
By A. ANDREAS, *State Geologist.*

Before the Oil Conservation Commission of the State of New Mexico. In the matter of the hearing called by the Oil Conservation Commission of the State of New Mexico for the purpose of considering: The adoption of regulations governing gas-oil ratios in the various producing fields in New Mexico. Case No. 19, Order No. 236

ORDER OF THE COMMISSION SETTING A TIME FOR THE PURPOSE OF PRESENTING OBJECTIONS TO THE COMMISSION AS TO ORDER NO. 238 OF THE COMMISSION (REGULATING AND PRESCRIBING MAXIMUM GAS-OIL RATIOS FOR THE VARIOUS FIELDS OF THE STATE OF NEW MEXICO) AND AS TO ORDER NO. 237 OF THE COMMISSION (PRESCRIBING RULES AND REGULATIONS FOR GAS-OIL RATIO SURVEYS IN NEW MEXICO)

By the Commission:

This cause came on for hearing at 10 o'clock a. m. on the 9th day of December 1939, in the chamber of the House of Representatives, in the State Capitol, Santa Fe, N. Mex.

Now, on this 13th day of January 1940, the commission having before it for consideration the evidence adduced at the hearing in said case and being fully advised in the premises, the commission adopted the following order simultaneously with the adoption of the two orders named hereinbelow:

This case is continued to Monday, March 4, 1940, at 10 o'clock a. m., at the State capitol, Santa Fe, N. Mex., for the purpose of presenting to the commission the objections which any party in interest may have as to the orders of the commission described hereinbelow in order that said orders may be respectively revised as the exigencies may require:

Order No. 238 of the commission, regulating and prescribing maximum gas-oil ratios for the various fields of the State of New Mexico.

Order No. 237 of the commission, prescribing rules and regulations for gas-oil ratio surveys in New Mexico.

Done at Santa Fe, N. Mex., this 13th day of January 1940.

NEW MEXICO OIL CONSERVATION COMMISSION,
By FRANK WORDEN,
Commissioner of Public Lands.
By A. ANDREAS,
State Geologist.

Before the Oil Conservation Commission of the State of New Mexico. In the matter of the hearing called by the Oil Conservation Commission of the State of New Mexico for the purpose of considering: The adoption of regulations governing gas-oil ratios in the various producing fields in New Mexico. Case No. 19

ORDER OF THE COMMISSION PRESCRIBING RULES AND REGULATIONS FOR GAS-OIL RATIO SURVEYS IN NEW MEXICO

By the Commission:

This cause came on for hearing at 10 o'clock a. m. on the 9th day of December 1939, in the chamber of the House of Representatives, in the State Capitol, Santa Fe, N. Mex.

Now, on this 13th day of January 1940, the commission having before it for consideration the evidence adduced at the hearing in said case and being fully advised in the premises, the commission adopted the order herein simultaneously with the adoption of:

Order No. 236 of the commission, setting a time for the purpose of presenting objections to the commission as to order No. 238 of the commission (regulating and prescribing maximum gas-oil ratios for the various fields of the State of New Mexico) and as to order No. 237 of the Commission (prescribing rules and regulations for gas-oil ratio surveys in New Mexico).

Order No. 238 of the Commission, regulating and prescribing maximum oil-gas ratios for the various fields of the State of New Mexico.

The rules and regulations set out hereinbelow shall govern gas-oil ratio surveys in New Mexico:

All operating gas-oil ratio tests shall be taken under the supervision of the Oil Conservation Commission of New Mexico.

DUTIES OF THE OIL CONSERVATION COMMISSION

(1) Assemble the information supplied by the operators as recommended in section 3 herein, and arrange test schedule; (2) to assign engineers to supervise tests except that such engineer shall not be in charge of the test on his employers property; (3) to properly instruct all engineers in the proper operation of measuring equipment and procedure in conducting the tests; (4) to calibrate and maintain all metering equipment in first-class condition; (5) to furnish, calculate, record and file all gas-measurement charts and records; (6) compute all gas-oil ratios; (7) determine whether the test was properly conducted, and if necessary schedule retests.

DUTIES OF THE ENGINEER IN CHARGE OF TESTS

The duties of the engineer are restricted to: (1) the supervision of the installation of the gas-measuring equipment; (2) the proper operation of the equipment; (3) the proper gaging of the lease tanks to accurately determine the production of oil and water; (4) the proper recording of the pertinent data required; (5) the supervision of the placing of seals or locking devices.

DUTIES OF THE OPERATOR

The operator shall: (1) in accordance with existing rules and regulations of the conservation commission, each will shall be equipped to conveniently make a gas-oil ratio test; (2) furnish the oil conservation commission a complete list of his wells showing the type of metering equipment best adaptable for accurate gas measurement in accordance with rules contained herein; such information shall include the size of vent line, size of orifice flange or connection available, and if possible, the desirable size of orifice in the orifice plate; (3) furnish sufficient and qualified lease labor to install and manipulate all lease equipment, including the installation and/or changing orifice, raising or lowering vent lines, etc.

MANNER OF TESTING

1. For the purpose of stabilization, each well shall be produced for a period of 24 hours at a rate as nearly as possible to the normal manner of operation but not less than the daily allowable.
2. Lease tanks shall be gaged by the supervisor at the beginning and end of this stabilization period.
3. No change shall be made which affects the rate of production during the last 18 hours of the stabilization period.
4. The test period shall consist of 24 hours. Oil shall be gaged for the full period and gas shall be measured for a period of at least 6 hours.
5. In case of a heading or stop-cocked well the gas shall be measured for the full 24-hour period.
6. If for any reason should gas be withdrawn from the casing, this volume of gas shall be added to that produced through tubing in computing the gas-oil ratio and such gas shall be measured for the full 48 hours of stabilization and test periods and the largest volume whether the first or second 24-hour period, shall be used in computing the gas-oil ratio.
7. For gas-lift or jetter wells the total voume of gas to be used in computing the operating gas-oil ratio is the total ouput volume minus the total input volume.

LIQUID MEASUREMENTS

1. All tanks shall be gaged to the nearest one-eighth inch. Case should be exercised to keep the gage line taut and in case there are ripples or foam on the oil surface the tank should be allowed to stand until the fluid reaches equilibrium and the foam can be brushed aside.

2. Tanks shall be thiefed immediately before and after the test and water percentage determined in accordance with the American Petroleum Institute specifications.

3. The total volume of liquid produced shall be calculated in accordance with the latest pipe-line strapping tables of the tanks.

4. The net volume of oil shall be the total volume of fluid less the volume of B. S. and W. as determined by paragraph 2 above.

5. Fluid level must be maintained relatively constant, such that the oil dump valve is covered at all times by at least 12 inches of liquid.

6. If it is necessary to use a flow tank for the separation of water the water-oil level must be the same at the beginning and end of the test and the water removed from the flow tank must be measured or metered.

7. All liquid measurements shall be in barrels of 42 gallons and shall be carried to the second decimal.

GAS MEASUREMENT

1. A calibrated pressure gage shall be installed on each separator and readings taken periodically. In the event the operator chooses to conduct the test at abnormally high pressures, a recording pressure gage will be installed on the separator and the measured gas-oil ration may be increased by the measured or estimated volume of gas going to the tanks. Estimated volume shall be based on the gas-solubility versus pressure curves for the field or area in which the well is located.

2. For computing the volume of all gas produced the standard of pressure shall be 10 ounces above an atmospheric pressure of 14.4 pounds per square inch, the standard temperature shall be 60° F. and the standard of specific gravity shall be 0.85 as compared to air. All measurements of gas shall be adjusted by computation to these standards. In case the gas measurement is made at an abnormally high pressure the measurement may be adjusted in accordance to deviation from Boyles law. Gas volumes will be computed in cubic feet and gas-oil ratios in cubic feet per barrel of oil.

3. Only recording type gas measuring devices may be used.

4. Orifice well testers, orifice meters, and side-pressure test nipples are approved as measuring devices and the side-pressure test nipplies are approved only when it is necessary to measure volumes larger than can conveniently be measured by orifice meter.

Any well that cannot be tested under the preceding rules shall be referred to the oil conservation commission for special consideration and rules.

All wells must be tested.

Done at Santa Fe, N. Mex., this 13th day of January 1940.

New Mexico Oil Conservation Commission,
[SEAL] By Frank Worden, *Commissioner of Public Lands.*
By A. Andreas, *State Geologist*

Before the Oil Conservation Commission of the State of New Mexico. In the matter of the hearing called by the Oil Conservation Commission of the State of New Mexico for the purpose of considering the adoption of regulations governing gas-oil ratios in the various producing fields in New Mexico. Case No. 19, order No. 238

Order of the Commission Regulating and Prescribing Maximum Gas-Oil Ratios for the Various Fields of the State of New Mexico

By the commission:

This cause came on for hearing at 10 o'clock a. m., on the 9th day of December 1939, in the chamber of the house of representatives, in the State Capitol, Santa Fe, N. Mex.

Now, on this 13th day of January 1940 the commission having before it for consideration the evidence adduced at the hearing in said case and being fully advised in the premises, the commission adopted the following regulations governing gas-oil ratios in the various producing fields in New Mexico, as follows:

The system of gas-oil ratio control in the State of New Mexico shall be known as that of volumetric control, which penalizes the unit of production for exceeding the maximum gas volume established for each field by decreasing its monthly allowable in accordance with the formula as provided hereinafter.

The maximum gas-oil ratio assigned to each field in New Mexico is listed below:

Field:	Ratios	Field—Continued.	Ratios
Cooper	10, 000	Skaggs	1, 000
Eaves	4, 000	Skelly	5, 000
Eunice	7, 000	South Eunice	5, 000
West Eunice	1, 000	South Lovington	1, 500
Halfway	1, 000	Vacuum	2, 000
Hardy	5, 000	Artesia	1, 000
Hobbs	3, 500	Grayburg-Jackson	1, 000
Jal	10, 000	Leonard	1, 000
Langlie	5, 000	Loco Hills	1, 000
Lynch	1, 000	Maljamar	1, 000
Lynn	3, 000	North Maljamar	1, 000
Mattix	5, 000	Red Lakes	1, 000
Monument	5, 000	Robinson	1, 000
North Lynch	1, 000	Shugart	1, 000
Penrose	7, 000	Barber	1, 000
Rhodes	1, 000	Getty	1, 000

1. Any oil-producing unit with a net gas-oil ratio in excess of the assigned maximum for the field in which it is situated as listed in the table above shall be allowed to produce daily a total volume of oil which, when multiplied by the gas-oil ratio of the unit, will result in a total gas volume that does not exceed the allowance per top allowable unit as fixed in the current monthly proration schedule of the commission for the field in which the unit is situated times the gas-oil ratio for said field. Provided, that nothing herein contained shall have the effect of increasing the oil allowable of any unit above that fixed in the current proration schedule.

2. All units to which gas-oil ratio corrections are applied shall be set up in the proration schedule first and the remaining oil equitably reallocated to the other producing units in the State.

3. A marginal well shall be permitted to produce the same total volume of gas which it would be permitted to produce if it were a nonmarginal well.

4. In the event that gas-oil ratios are not reported for any unit, then that unit will be omitted from the proration schedule.

5. The gas-oil ratio used in calculating penalties for any producing unit shall be those reported immediately prior to the beginning of the proration period on Form C–104–A or those measured under the supervision of the oil conservation commission.

Done at Santa Fe, N. Mex., this 13th day of January 1940.

[SEAL] NEW MEXICO OIL CONSERVATION COMMISSION,
By FRANK WORDEN, *Commissioner of Public Lands.*
By A. ANDREAS, *State Geologist.*

RULES AND REGULATIONS FOR GAS-OIL RATIO SURVEYS IN NEW MEXICO

INTRODUCTION

In accordance with the resolution adopted by the subadvisory committee of the Lea County Operators Committee at the meeting held in Midland, Tex., on January 8, 1940, the engineering advisory committee recommends the following tentative rules for the purpose of this survey of gas-oil ratios in Lea County. In view of the diverse operating conditions throughout Lea County, and of the limited time to promulgate these rules, the engineering committee requests the right to change and modify the rules to meet unusual or unforeseen conditions which may arise.

In view of the fact that certain of the lands in the area are operated under Federal permit, the Geological Suvey oil and gas operating regulations as revised on November 1, 1936, are applicable to those lands. The liberty has been taken to quote a portion of the paragraph on gas measurement on page 13 of the above regulation.

The liberty has also been taken to quote freely from the Texas Railroad Commission pamphlet titled "Methods for Determination of the Volume of Gas Used in Computing Operating Gas-Oil Ratios" and published by the oil and gas division engineering department in June 1937.

RULES

I. All operating gas-oil ratio tests shall be taken under the supervision of one or more engineers appointed by the chairman of the engineering committee

Duties of the engineer.—The duties of the engineer are restricted to: (1) The supervision of the installation of the gas-measuring equipment; (2) the proper operation of the equipment; (3) the proper gaging of the lease tanks to accurately determine the production of oil and water; (4) the proper recording of the pertinent data required; (5) the supervision of the placing of seals or locking devices.

Duties of the operator.—The operator shall: (1) In accordance with existing rules and regulations of the conservation commission, each well shall be equipped to conveniently make a gas-oil ratio test; (2) furnish the chairman of the engineering committee a complete list of his wells showing the type of metering equipment best adaptable for accurate gas measurement in accordance with rules contained herein; such information shall include the size of vent line, size of orifice flange or connection available, and if possible, the desirable size of orifice in the orifice plate; (3) furnish sufficient and qualified lease labor to install and manipulate all lease equipment, including the installation and/or changing orifice, raising or lowering vent lines, etc.

Duties of the chairman of the Lea County Engineering Committee.—(1) Assemble the information supplied by the operators as recommended above, and arrange test schedule; (2) to assign engineers to supervise tests except that such engineer shall not test his employers propertyy; (3) to properly instruct all engineers in the proper operation of measuring equipment and procedure in conducting the tests; (4) to calibrate and maintain all metering equipment in first-class condition; (5) to furnish, calculate, record and file all gas-measurement charts and records; (6) compute all gas-oil ratios; (7) determine whether the test was properly conducted and if necessary schedule retests.

II. Manner of testing

1. For the purpose of stabilization, each well shall be produced for a period of 24 hours at a rate as nearly as possible to the normal manner of operation but not less than the daily allowable.

2. Lease tanks shall be gaged by the supervisor at the beginning and end of this stabilization period.

3. No change shall be made which affects the rate of production during the last 18 hours of the stabilization period. At the end of the stabilization period it is permissible to switch from a lease separator to the test separator.

4. The test period shall consist of 24 hours. Oil shall be gaged for the full period and gas shall be measured for a period of at least 6 hours.

5. In case of a heading or stopcocked well the gas shall be measured for the full 24-hour period.

6. If for any reason should gas be withdrawn from the casing, this volume of gas shall be added to that produced through tubing in computing the gas-oil ratio and such gas shall be measured for the full 48 hours of stabilization and test periods, and the largest volume, whether the first or second 24-hour period, shall be used in computing the gas-oil ratio.

7. For gas-lift or jetted wells the total volume of gas to be used in computing the operating gas-oil ratio is the total output volume minus the total input volume.

III. Liquid measurements

1. All tanks shall be gaged to the nearest ⅛ inch. Care should be exercised to keep the gage line taut, and in case there are ripples or foam on the oil surface the tank should be allowed to stand until the fluid reaches equilibrium and the foam can be brushed aside.

2. Tanks shall be thiefed immediately before and after the test and water percentage determined in accordance with the American Petroleum Institute specifications.

3. The total volume of liquid produced shall be calculated in accordance with the latest pipe line strapping tables of the tanks.

4. The net volume of oil shall be the total volume of fluid less the volume of B. S. and W. as determined by paragraph 2 above.

5. Fluid level must be maintained relatively constant, such that the oil dump valve is covered at all times by at least 12 inches of liquid.

6. If it is necessary to use a flow tank for the separation of water the water-oil level must be the same at the beginning and end of the test and the water removed from the flow tank must be measured or metered.

7. All liquid measurements shall be in barrels of 42 gallons and shall be carried to the second decimal.

IV. Gas measurement

1. A calibrated pressure gage shall be installed on each separator and readings taken periodically. In the event the operator chooses to conduct the test at abnormally high pressures, a recording pressure gage will be installed on the separator and the measured gas-oil ratio may be increased by the measured or estimated volume of gas going to the tanks. Estimated volume shall be based on the gas-solubility versus pressure curves for the field or area in which the well is located.

2. For computing the volume of all gas produced the standard of pressure shall be 10 ounces above an atmospheric pressure of 14.4 pounds/square inch, the standard temperature shall be 60° F., and the standard of specific gravity shall be 0.85 as compared to air. All measurements of gas shall be adjusted by computation to those standards. In case the gas measurement is made at an abnormally high pressure the measurement may be adjusted in accordance to deviation from Boyles law. Gas volumes will be computed in cubic feet and gas-oil ratios in cubic feet per barrel of oil.

3. Only recording type gas measuring devices may be used.

4. Orifice well testers, orifice meters, and side pressure test nipples are approved as measuring devices and the side-pressure test nipples are approved only when it is necessary to measure volumes larger than can conveniently be measured by orifice meter. A standard set of tables will be furnished for each device by the chairman of the engineering committee.

V. Any well that cannot be tested under the preceding rules shall be referred to the engineering committee for special consideration and rules

Mr. Cole. Col. Ernest O. Thompson, representing the Interstate Compact Commission stated that he would appear before the committee at a subsequent date and present a statement in behalf of the compact commission. It was assumed that Colonel Thompson, at that time, would present for the record, the information requested by Congressman Wolverton and me during the hearings in New Orleans in December 1939. In lieu of personal appearance, Colonel Thompson has forwarded the statement which is inserted at this point.

STATEMENT OF ERNEST O. THOMPSON, MEMBER OF THE RAILROAD COMMISSION OF TEXAS, BEFORE THE COLE COMMITTEE

My name is Ernest O. Thompson. I am a member of the Railroad Commission of Texas. The Railroad Commission of Texas is an elective body composed of three members who serve a term of 6 years, one being elected each 2 years. I have been a member of this commission since 1932.

I have represented the State of Texas on the Interstate Oil Compact Commission since the creation of the interstate oil compact and for 3 years I served as its chairman.

It has always been my idea that the Interstate Oil Compact Commission should be a cooperative enterprise in which the States, through the interchange of ideas, should help each other in the prevention of physical waste of oil and gas within the confines of their respective borders.

I know the compact commission has done exactly this thing. We have cooperated to the fullest extent.

The compact commission has met in all of the various member States and at these meetings, we have done everything we know how to do to further the interest of conservation among the member States. We have invited, at each of our meetings, the attendance of all the other oil-producing States and I am happy to tell you that at most every meeting, the other oil-producing States which were not members, have sent observers to our meetings and have taken part in our discussions to the end that a better understanding could be had with regard to the application of sound engineering principles to the production of oil and gas within the respective sovereign States.

We are very proud to receive a message from the President of the United States at the meeting held in Santa Fe, N. Mex. in July 1937, which read as follows:

"Col. Ernest O. Thompson,
Chairman, Interstate Oil Compact Commission,
Santa Fe, N. Mex.

"I am happy to send my personal greetings to the Governors and representatives of the oil-producing States meeting with the Interstate Oil Compact Commission and to wish you success in your endeavor. I am hopeful that your discussion will point the way to broader understanding of the need for application of sound engineering principles in the conservation of our oil and gas resources.

"Franklin D. Roosevelt."

The President, in this telegram, expresses the hopes, aims, and purposes of the interstate oil compact. Our meetings have caused us to understand each others problems. We have gotten acquainted with each other and rivalries between States have disappeared. We have come to realize the problems of each other. We have come to realize that all the problems do not exist in one particular State. Neither has any one State got all the problems. One of the first jobs that the compact did when we were first organized was to appoint a committee on uniform laws, headed by Hon. Homer Hoch, chairman of the Corporations Commission of Kansas. This committee labored long and industriously and compiled a report of some 168 pages, in which all the laws, rules, and regulations of all the oil States were gotten together and codified. This was mimeographed and sent to each of the member States. We turned it over to the mineral section of the American Bar Association for printing and I am in hopes that it will soon be printed.

On many occasions the compact commission has sent delegations to confer with other States and to assist in the adoption of advanced proration laws.

I believe it is admitted that the State of Arkansas has a good law and that they agree that the compact experience assisted them in drafting this law. The same is true of the State of Michigan.

It has not been our aim or purpose to try to force anyone to receive our services, but we have made it known that we were readily available and happy to assist in any way that we could toward the adoption of up-to-date and modern conservation laws.

As members of the compact, many of us have gone over the length and breadth of the land, making speeches and spreading the gospel of conservation among the oil-producing States. I know that I have made at least 100 speeches as chairman of the compact commission, in which it has been my pleasure to try to explain what the compact was attempting to do and, in my opinion, was doing in a workmanlike manner.

The compact's idea was thoroughly explained to the industry from one end of America to the other at meetings of the industry and at meetings of the operators.

I, personally, as chairman of the compact commission, visited the States of Michigan, Kentucky, and California and talked to the Governors and legislators of those States, trying to urge upon them the adoption of modern conservation laws.

We held a compact meeting in the State of Louisiana in an effort to get that State lined up with our compact and I am hopeful that the State of Louisiana will join the compact within a short time.

Governor Phillips of Oklahoma, the present chairman of the commission, told you that he had the assurance of some five States that they were going to promptly join the compact.

This I consider a splendid growth of an idea. We could not want it to grow faster than complete understanding of the aims and purposes of the compact could be made known.

I know that the workings of the compact and associations have been beneficial and helpful to me in my work and the officials of other regulatory bodies have been kind enough to say the same thing.

Some say the compact has no power. My reply to that is that Texas would not join it if it had the power to force other States to do anything. We do not believe that sovereignty is compatible with force.

The compact does have the greatest force on earth behind it and that is the power of enlightened public opinion. Without enlightenment and understanding no progress can be made in this thing called conservation. It is a process of education and understanding.

I have recently reread the hearings before this committee in 1934 and, my, what a difference it is now than then.

At that time, we were talking about "hot" oil and overproduction, demoralization of price, ruination of the industry, chaos, and such things as that, which were incident to bringing in a new supply of oil in the East Texas field. That field is now under almost perfect regulation.

The courts have recently decided that the top allowable is a proper one and the only argument we have now is who gets what and by that I mean the division of the oil within the various parts of the field as between one property and another.

This is a very difficult problem if you are seeking to divide oil in place 3,000 feet below the surface of the earth on the most technical sort of calculations, figuring out what is in between the wells as though they were the same as the wells that were drilled.

"Hot" oil is a mere forgotten thing of the past. We have brought in hundreds of oil fields in Texas since the East Texas field and they take their place in the picture in an orderly fashion under complete regulation.

This is true of the other oil States in the compact.

Now, today and throughout this year, we have been talking about specific instances of gas-oil ratios, talking about the burning of flares, and small minute details of regulations. There is no chaos. No one is calling upon the Federal Government to save the industry.

On the other hand, a solid front has been presented by both large and small elements of the industry and by at least 14 sovereign oil-producing States, asking that the States be allowed to work out their own oil production control problems.

I should think the Federal Government should be happy to see that in the short space of 5 years the industry and the States have come to recognize the wisdom of producing oil and gas under the best known methods of engineering science and that the industry has found it entirely feasible and proper and most convenient to it to have production controlled by the States themselves.

This committee, I know, should feel happy over the progress that has been made and I am glad to say that these hearings have given us the opportunity of making the acquaintance of the very talented and faithful public servants who compose the membership of this fine committee.

A word about the shut-down in August 1939. The various regulatory bodies of the oil States had for some 2 years been seeking to reduce the amount of oil in storage above ground. This we did by slightly going under the Bureau of Mines recommendations to make room for oil to come out of storage instead of producing the entire market demand.

We had been progressing in this task of reducing storage above ground at what we thought was a satisfactory manner until in August 1939, there came a reduction of 20 cents a barrel in the price of oil.

The Railroad Commission of Texas took this cut in the price of oil as an indication that there was too much oil above ground because statements accompanying the cut were to the effect that oil was being offered variously at prices below the posted price.

Therefore, the Railroad Commission of Texas, in order to prevent the production of more oil than was necessary, and in order to check up on the storage of oil above ground, ordered shut in for 15 days all the wells in the State of Texas that could be closed without injury to the wells. We did this to overcome the indicated surplus. The surplus was indicated by the drop in price.

There was universal obedience and acceptance to the commission's order in the State of Texas.

Governor Ratner and Governor Phillips of Oklahoma, called me, as chairman of the compact commission, and asked me to call a meeting of the compact, which I did at their request, in the office of Governor Phillips in Oklahoma City, Okla.

Governor Phillips was here on this witness stand and could have told you about this meeting if he had been asked.

The meeting was opened by myself, by calling for order and having the entire compact read as is our custom. Then a discussion was started, State by State, starting with Kansas, then Oklahoma, then New Mexico, in which each State spoke of the tragic effect it would have upon their stripper-well production if the price of oil should be cut.

I told them that was a situation upon which the compact could not, in my opinion, take any action, but that the State of Texas had already acted and we had shut down such wells as could be closed down without injury until the period of oversupply was over and that coincident with shutting down wells in Texas, we had called a hearing for August 28, at which time a further check on the storage situation would be taken.

It was decided then, at my suggestion, that a resolution be passed to the effect that each State would handle its own production problems in its own way, under its own statutes. Whereupon the meeting adjourned.

This is as complete a description of the meeting as could be had. I called the meeting, I told them Texas had already shut down. I did not urge any other State to shut down. We simply talked the situation over and each State made its own announcement as to what it intended to do.

At the end of the 2-week shut-down, it was found that there was not, in fact, too much oil on hand. Stocks were reduced 30,000,000 barrels during the 15-day shut-down. This seemed to put stock position in about the right place. Estimates from the industry are that about 230,000,000 barrels of oil above ground seems to be about the necessary minimum working stocks of crude necessary to the uninterrupted operation of the industry.

It has been a pleasure to come before this committee on many occasions and I am glad to be here again today and I sincerely urge upon this committee that there is no necessity for the passage of this proposed bill; that the national defense of the Nation does not require Federal intervention in oil-production control; and that the interstate commerce power does not give the Federal Government the right to control mere production.

It is my respective conclusion that this bill here proposed is neither desirable nor necessary. There is no industry in America that is going forward with such strides as is the oil-producing industry. Reserves are constantly on the increase and greater utilization is being made of the oil that is being uncovered.

I wish all other industries were progressing as fast as is the oil industry and I trust this committee will recommend that this bill do not pass.

(The Corporation Commission of Oklahoma, through William J. Armstrong, conservation officer, was given permission at the time of his personal appearance before the committee, to file an answer to the last report of the Interior Department made in reference to present-day waste in the oil fields. The statement of the commission, received on April 2, 1940, is filed herewith:)

SUPPLEMENTAL REPORT OF OIL AND GAS CONSERVATION DEPARTMENT OF THE CORPORATION COMMISSSION OF OKLAHOMA IN ANSWER TO THE SUPPLEMENTAL STATEMENT FILED BY THE DEPARTMENT OF THE INTERIOR ON FEBRUARY 8, 1940, BEFORE THE OIL SUBCOMMITTEE (REPRESENTATIVE WILLIAM P. COLE, JR., OF MARYLAND, CHAIRMAN) OF THE HOUSE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE IN CONNECTION WITH H. R. 7372

(This reply is being filed by special permission granted by this committee)

On February 8, 1940, the United States Department of Interior filed a supplemental statement in connection with H. R. 7372 containing some general and, for the most part, erroneous allegations of waste. These allegations were all concerned with what is commonly known throughout the industry as prorated areas and stripper or settled production areas. The very apparent attempt of this supplemental statement, both by the United States Geological Survey and the United States Bureau of Mines, was to show present-day waste in these cases, and the accusation or inference was that the regulatory body was negligent in its duty to prevent such waste. We submit that these allegations, one and severally, are misleading and are not consistent with the actual facts and conditions, particularly those now prevalent.

The reason for this belated answer is the fact that at the time (February 8, 1940) the Department of Interior filed said allegations, it filed only one copy with your committee and additional copies were not made available to us immediately; therefore it was approximately 3 weeks before we were able to obtain a copy of said allegations. Furthermore, the allegations were of a very indefinite nature and failed to give the legal description of the properties complained of, which resulted in further delay before we were able to prepare this response.

The accusations are herein answered on the basis of actual physical investigations of each and every charge, made by competent engineers and geologists of the oil and gas conservation department, and furthermore the production figures set out in the allegation regarding various properties were thoroughly checked from the records of this department and the gross production division of the Oklahoma Tax Commission and the records of the various producing oil companies owning these properties.

For the benefit of the record we will analyze that part of the statement which pertains to Oklahoma.

EXHIBIT A. OKLAHOMA

(U. S. Geological Survey)

Jesse pool

In the allegation regarding the Jesse pool it is pointed out that the casing program in this field was improper in that it exposed several formations in the same hole. The statement does say or does infer that this was common practice in 1935 and in the early life of the field. However, in April 1936 the Corporation Commission of Oklahoma issued an order setting out casing setting procedure designed to protect at least formerly exposed formations. This order was made 15 months earlier than the stated requirement of the Geological Survey of October 1937, for the setting of casing in wells drilled on Indian land in this pool. We have checked all the facts in this pool and find that the inferences in the allegations are totally erroneous and misleading. According to the allegation itself the only specific request made by the Geological Survey for the setting of a tubing packer below the dry gas formation in a well in this pool resulted in the death of three men.

As a matter of fact, we hold the Jesse pool is an outstanding example of proper conservation considering that the pool is now over 5 years old and 19 of the total of 24 Simpson formation wells still flow natural, which certainly evidences the conservation of reservoir energy in this field.

Allen pool

In connection with the waste of both gas and reservoir energy in the Allen pool the allegation of the United States Geological Survey pointed to one undisclosed lease, which apparently is the Westheimer & Neustadt, Factor lease in section 25, T. 5 N., R. 7E, but of this lease it does say that the condition was remedied. This example is the only one cited which apparently could be found of approximately 300 wells which have been drilled and operated in this pool since 1928, nevertheless the inference is evidently intended to be conveyed, that many of the wells in this pool were being operated inefficiently under this same circumstance as the single veiled citation, which is certainly not the case as disclosed by the producing history of this pool.

Fitts pool

With reference to the allegations in the Fitts pool, we find that the wet gas (gas without gasoline extracted) is not being vented to the air at the present time. The figures given as vented gas are almost 3 times too large by actual check.

Gas of low gasoline content was vented during the early life of the field but it had served its purpose as a recovery agent in bringing the oil to the surface from the reservoir and was not produced excessively. There was not a market for this gas at the time it was produced and therefore cannot be called avoidable waste.

The allegations in the Fitts pool notwithstanding, the orders of the corporation commission made from time to time and developed after thorough engineering investigation show that the most applicable advanced methods were used in this pool considering that the Fitts pool offered a multiple of geological, physical, and economic problems not encountered in other pools heretofore discovered in this State. Almost continuously since the discovery of the pool a committee composed of eminent engineers of the State were constantly considering the most efficient manner and methods of practically meeting these problems as they occurred. For more than a year, and as conditions would permit, the surplus gas has been returned to the formation in an effort to accomplish secondary recovery. This program has been progressively expanded and at the present time a committee appointed by the corporation commission has formulated a comprehensive plan which, when perfected, will utilize all of the available gas.

Fox-Graham pool

We find after investigating that as a result of a larger available market developed late in 1939, the figures submitted by the United States Geological Survey in the allegation have changed. Recent figures reflect that the total volume of about 9,000,000 cubic feet daily were disposed of; lease returnable gas 5,000,000 cubic feet, venting 2,000,000 cubic feet, and marketing 2,000,000 cubic feet.

All the wells in this area are commonly known as stripper wells and these wells have been producing over 20 years.

Under the general viewpoint of the Department of Interior concerning waste one of three things must be done to eliminate the discharge of 2,000,000 cubic feet of gas to the air daily from 382 wells which have been producing over 20 years. These are (1) secure an adequate market, (2) return to the reservoir all gas produced but not used or sold or, (3) shut in the wells now producing. An adequate market for the gas does not exist and it is economically impractical to return the 2,000,000 cubic feet of gas to the reservoir. Therefore, the only possibility left to prevent the escape of this volume of gas to the air is to shut down the wells. Such a procedure would definitely leave oil in the reservoir never to be produced for the benefit of the operator, royalty owner, or general public and in our opinion would result in a much more definite waste of natural resources than to permit such gas to be dissipated to the air.

EXHIBIT B. OKLAHOMA

(Bureau of Mines)

Oklahoma City field

The Oklahoma City field was one of the first major, deep, high-pressure fields to be developed in the midcontinent area. High potential rates of gas and oil production made most past knowledge of petroleum engineering obsolete.

The conservation department of the corporation commission early took cognizance of the gas-oil ratio problem in its various orders given in the attempt to lower gas-oil ratios. These orders were made as the result of the testimony of the most competent geologists and petroleum engineers in the industry and of the conservation department. Casing programs were also revised and other conservation orders have been made throughout the history of the field in order to meet changing conditions.

The gas produced from Pennsylvanian formations above the lower oil-producing horizon has already exceeded the Bureau of Mines ultimate recovery estimate and the present 24-hour potential of these gas wells is over 420,000,000 cubic feet.

This evidences no appreciable waste in the recovery of oil or gas in this field.

Moore pool

The Moore oil and gas pool located in T. 10 N., R. 2 W., Cleveland County, Okla., was discovered in June 1935, with the completion of the Sinclair, community No. 1–A, a 200,000,000 cubic foot gas well with a large distillate content from the Wilcox sand topped at 7,267 feet.

This field is located approximately 4 miles southeast of the south end of the Wilcox sand production in the Oklahoma City field and on the same Nemaha buried mountain trend.

The structure responsible for the accumulation of gas and oil is a sharp anticline with a fault cutting the east side.

The Wilcox sand in the Moore pool, which is the main producing formation is not uniform in texture or porosity in the vertical section. It has many irregular breaks due to the amount and character of cementing material. Movement of fluid or gas from bottom to top of the sand, or vice versa, is not readily accomplished. Horizontal movement of gas or fluid, while more free than the vertical movement, is in itself limited by a fractured condition and an average low porosity of 13 percent. Oil saturation of cores analyzed was very light. The average thickness penetrated in producing wells was 32 feet. The dry holes drilled defining the pool early in the field's development proved that a greater penetration was not feasible because of a salt-water level in the sand. Early estimates of ultimate production of the pool were influenced by the proximity of the prolific Oklahoma City Wilcox sand, and an anticipation of much greater producing area. Five dry holes were drilled before there were five producers in the pool. These estimates, although made by several competent geologists, were much too high.

Effective July 1, 1937, the Corporation Commission of Oklahoma ordered the adjustment each month of the potential of a well in the ratio of the bottom hole pressure of each individual well to the average bottom hole pressure of all wells in the pool. This was decided on in order to equalize the pressure in the reservoir by granting increased allowables in favor of wells that were producing with more efficient use of reservoir energy, and reducing the allowable on those wells with lower than average bottom hole pressures.

On September 11, 1937, the commission issued order No. 11623 setting a maximum gas-oil ratio of not to exceed 4,000 cubic feet of gas to one barrel of oil produced. The gas-oil ratio was determined by an actual 24-hour gauge in the manner in which an operator normally produced his allowable. The bottom hole pressure tests and gas-oil ratio tests were made under the supervision of a deputy conservation officer.

The operator had the right to transfer allowable of a high gas-oil ratio well or wells on the same lease having a gas-oil ratio of less than 4,000 cubic feet to a barrel. In the case of a one-well lease, the operator could produce the underage accumulating to the lease when the gas-oil ratio was reduced and did not exceed the limit of 4,000 cubic feet. Underage made up in any one month was limited to 25 percent of the current allowable of a well. At the time of this gas-oil ratio order, the minimum allowable of any well was reduced from 200 to 150 barrels per day. The gas-oil ratio order also applied to these minimum wells. Every known practical method of lowering gas-oil ratio was used in this field and thousands of dollars spent by the operators in experimenting.

Efforts to shut off water by plugging back of wells producing from the Wilcox sand has been unsuccessful. When the water is shut off the oil is also shut off. Coning of water is not an important factor because of the previously stated characteristics of the producing horizon.

The corporation commission's order was for a gas-oil ratio and not a gas-fluid ratio, which would have been a ratio of gas to oil and water produced. The actual gas-fluid ratio has therefore been much lower than the prorated gas-oil ratio.

The average allowable of wells in the pool to January 1, 1940, has been only 3.65 percent of the potential.

East Bruce field—Creek County

In the East Bruce field, of Creek County, the Bureau of Mines charged that 2,700 barrels was produced from May to December 1939, which reflects a monthly production of approximately 400 barrels, or 13 barrels per day. We further find that the Bureau of Mines obtained information regarding this allegation from the Oil and Gas Journal of September 7, 1939. The description of the undisclosed well seems to be the B. F. Green-Myers No. 1 in the SW.SE.SE. of section 1, T. 17 N., R. 9 E., producing from the Oswego lime at 1,732 to 1,777 feet, and the 7-inch casing was set at 1,735 feet or 3 feet in the top of the producing horizon. This is pumping at the present time through 2-inch tubing. It is a low-pressure area; having wells drilled since 1923, and the small amount of gas this well is now producing is all being utilized on the lease and after a thorough investigation, we find that there has been no waste of gas or oil on this lease. Therefore, this allegation is erroneous.

Deep Fork field—Creek County

The allegation charges that a well producing 9,000 barrels from March to December 1939, reflected a monthly production of approximately 900 barrels, or 30 barrels per day. The description of this undisclosed well apparently is known as the Tibbens Oil Co.'s Ellis E. Wilson No. 3, in the center of the north line of the NW.SE. of section 18, T. 14 N., R. 9 E. This well was completed in February 1939, and the average production for the first 10 days was 107 barrels, producing approximately 15,000 cubic feet of gas per day. All the gas is purchased by the Gulf Refining Co. at the rate of 25 percent, or less, of the open-flow capacity of the well under the State law. Furthermore, the well is properly cased and is pumping through 2-inch tubing.

Heyburn pool (Kellyville District)—Creek County

The allegation charges that two new wells had an initial production of 1,000 barrels and 554 barrels, respectively. This information was obtained from the Oil and Gas Journal of September 7, 1939, and the description of the undisclosed wells apparently are the McAdams and Thornton McMann No. 1–B in section 13, T. 17 N., R. 10 E., and the McSoud No. 1 of the same section. These wells were not opened to capacity in order to establish a 24-hour initial production, or potential tests, as stated in the trade journal and at the time McMann No. 1–B was completed, it was allowed to produce 50 barrels a day until July 1, and from July to November, inclusive, both wells produced in accordance with the per well allocation as set out in exhibit B and at the present time are producing approximately 100 barrels per day. The gas production from these wells is quite small and it is utilized upon the lease, therefore, constituting no waste of gas or oil on these properties.

West Nuyaka pool—Creek County

The allegation charges that there were 5 wells having an initial production ranging from 100 to 500 barrels a day. The description of these undisclosed wells are apparently the 3 wells operated by William Dunn et al., and 2 wells operated by J. R. Higgins, all in sec. 34, T. 14 N., R. 10 E. We find that these wells have never been permitted to produce at full capacity. Therefore, the initial productions are merely estimates. These wells were completed and are, and have been, operated under the latest scientific methods and the wells are producing 100 barrels per day under 400 to 500 pounds of back pressure. The casing in each well was set in the top of each producing horizon and all wells are properly cased and tubed. The gas production is being marketed and there is no existing oil or gas waste in these wells.

The Bureau of Mines obtained the source of information regarding this allegation from the Oil and Gas Journal of September 7, 1939. In the same allegation they state that a well northwest of this pool was completed in March 1939, with an estimated initial production of 500 barrels per day. Apparently the description of this undisclosed well is referred to in the Oil and Gas Journal of September 7, 1939, which is the Martin Wesby and Green's Perryman No. 1, in the SW¼ NE¼ NW¼ of sec. 28, T. 14 N., R. 10 E., which was completed in February 1939, and actually produced 200 barrels in 24 hours for the initial test. Furthermore, the allegation states that the well has been permitted to produce 27,500 barrels, or a monthly production of approximately 3,000 barrels, or 100 barrels a day. The small amount of gas produced is utilized on the property and the well is properly cased and tubed.

Scholem-Alechem and Fox fields—Carter County

The allegation states that 2 wells were reported to have an initial production of 291 and 249 barrels per day, respectively. These undisclosed wells apparently are the Magnolia Petroleum Co.'s No. 4 Love, in sec. 33, T. 1 N., R. 3 W., which the Bureau of Mines used the Oil and Gas Journal of November 23, 1939, as a basis for the initial production of 291 barrels; whereas, this well on October 26, 1939, pumped 106 barrels per day with no gas production from a total depth of 4,444 feet.

The other well referred to in this allegation in the Fox field apparently is the Magnolia Petroleum Co.'s Hefner-Mills No. 1, in the center of the east half of the SW. NE. of sec. 33, T. 2 S., R. 3 W., and the Bureau of Mines obtained the initial production of 249 barrels in the Oil and Gas Journal of February 9, 1939. This well was producing from the Oolitic lime from 7,933 to 7,976 feet, with a 7-inch casing set at 7,934 feet. This well is what is commonly referred to as a freak well and a short time after the well produced its first oil it went dead and since such time the operator was unable to obtain any production from same. At the present time, the well is being plugged back, in order to test the upper horizons.

No waste occurred because of the manner in which these two wells were completed and operated.

Sac and Fox fields—Lincoln County

The allegation charges that new wells have an initial production ranging from 100 to 200 barrels and one with 406 barrels per day after shooting. Apparently the Bureau of Mines obtained the information for this allegation from the Oil and Gas Journal of March 2, 1939, which refers to the Cooper Drilling Co. school-land lease in sec. 16, T. 14, I 6. We find that of the 8 wells producing on this property, the initial production for any one well did not exceed 120 barrels per day. They are producing from the Prue sand from apparently 3,000 to 3,100 feet. They are all properly cased and pumping through tubing not exceeding 2½ inches. The small amount of gas produced is marketed..

Wilzetta area—Lincoln County

The allegation charges that 2 wells have had an initial production of 652 and 245 barrels, respectively. One of these undisclosed wells is apparently the Stanolin Oil & Gas Co.'s Martinek No. 2 in sec. 35, T. 13 N., R. 5 E., as appeared in the Oil and Gas Journal of July 20, 1939. This well is drilled in the center of 20 acres and is producing from the Hunton lime and since its completion has never been permitted to produce to capacity. From July to November 1939 it produced in accordance with the per-well allocation as set out in exhibit B. The facts are that this well makes very little gas; the energy source being a hydraulic drive. The well is choked or restricted and tests have shown that if produced at a lesser rate than 100 barrels per day, the water encroachment is exceedingly rapid and the water-oil ratio is greatly increased so the well has been produced continuously at the rate of 100 barrels per day.

The other well in question apparently is the Gulf Morgan et al., Vlasak No. 1 in sec. 2, T. 12 N., R. 5 E., which is the south offset to the Martinek No. 2, drilled in the center of 20 acres and completed and operated under practically the same methods and conditions as that of the Martinek No. 2. The production from this well does not exceed 100 barrels. The Bureau of Mines apparently obtained the initial production from the Oil and Gas Journal of July 30, 1939.

Both of these wells are being operated under the best known scientific methods and all measures of conservation are exercised in their operations. The salt water from these wells is disposed through a salt water disposal system.

Lafoon area—Lincoln County

The allegation regarding this matter states that a few new wells completed in the Wilcox sand have had an initial production of 680 barrels to 60 barrels a day which information was reported in the Oil and Gas Journal of July 6, 1939. One of these wells is apparently the Allied Material Co.'s, Tipkin No. 1, which actually pumped approximately 300 barrels a day on its initial test, and apparently the other well in question is the Yorkan, Tipkin No. 1, which actually produced 10 barrels in 24 hours from the Wilcox sand at a total depth of 4,286 feet and later it was plugged back to the Hunton lime at a total depth of 4,144 feet and finally completed as a gas well for 11,350,000 cubic feet of gas. The crude oil production from this area is of low gravity, ranging from 23° to 25° and is primarily used for road oil. There is no crude oil pipe line connection and the oil is trucked at intervals when road oil is needed.

The gas production from this area is purchased by the Oklahoma Natural Gas Co. and the rate of take is 25 percent or less, of the open flow capacity, as prescribed by the law of Oklahoma.

Weleetka field—Okfuskee County

The Bureau of Mines alleges that a well drilled west of the Weleetaka field had an initial flow of 244 barrels of oil and 6,000,000 cubic feet of gas per day. The well referred to is apparently the Summit Drilling Co., No. 2–A Steil, in sec. 18, T. 10 N., R. 11 E., and appeared in the Oil and Gas Journal of December 21, 1939. While it has a potential flow of 244 barrels of oil a day, the gas potential was 1,000,000 cubic feet and not 6,000,000 cubic feet as alleged. Immediately following the initial test, a one-fourth-inch bottom hole choke was installed in the well and since that time it has been permitted to flow a maximum of 150 barrels per day; all the gas production being sold at the rate of 25 percent or less, of its open flow capacity under contract to the Public Service Co. of Oklahoma, for domestic purposes in the city of Weleetka, Okla.

Hickory Creek area—Osage County

The allegation states that a well in Hickory Creek area was reported to have an initial production of 200 barrels a day from the Wayside Sand at a depth of 950 feet and several new locations were reported. Apparently the Bureau of Mines obtained this information from the Tulsa Daily World of December 8, 1939. The article, as originally appeared in the World was as follows: "Burke-Greis Oil Corporation's No. 2, in the NE. sec. 9, T. 28, R. 11 E. in the Hickory Creek-Bouring sector, in Osage County, was cleaning out after shooting. The well was drilled to a total depth of 1,006 feet at the top of the Wayside Sand at 950 feet. Operators were unable late Thursday afternoon to make an estimate of the production."

This well is on the Osage Indian Reservation and is under the direction supervision of the Department of the Interior, and if any waste is occurring, or has occurred, in this area it is the responsibility of the Department of Interior.

Nowata area—Nowata County

It is alleged that an estimated 35 percent of the area of stripper production in this vicinity is being operated by water flooding and many of the leases in this area are being repressured with air or gas and it is alleged that when pressure was applied to the water-injection wells, that water and oil appeared on the surface of the ground because of faulty practices of years ago.

This allegation is so general that it is difficult to answer intelligently. When water flooding as a secondary method was introduced in this area some 7 years ago, it began purely as an experiment and is still in the experimental stage. The wells which had been completed some 20 to 30 years were, when they were drilled, completed with the best then known methods and under the supervision of the Department of Interior, at which time this part of Oklahoma was in what was termed as Indian Territory.

Improvement in methods over that period have, naturally, taken place. On the whole, this water flooding experiment has progressed and methods have improved until at the present time real progress is being made in the recovery of oil, which otherwise would have been left in the ground and wasted.

Chelsea area—Rogers County

The example set out in the allegation of Rogers County has been investigated and we find it to be the Wellsville Oil Co.'s Martha Everett lease in sec. 20, T. 24, R. 17 E., and we find that the July 1939 production of 15,000 barrels, as alleged, represents the production from both properties under water flooding now the Everett and Thomas leases, in sec. 17, T. 24, R. 17 E. and of this amount, some 500 barrels of accumulated oil has been held in storage for treatment and same was marketed during July.

After investigation, we find that some 500 to 800 barrels of water per day is pumped from the pond (fig. 15) to the treating plant for usage in the water flooding project, and the oil run to the pond for weathering and sunlight treatment does not exceed 5 barrels per day and it is merely tank bottom (B. S. & W.) and has a paraffin base content that will not treat out during cold weather, but during the warmer weather these tank bottoms are treated out through the regular treating system, with approximately 1° loss in gravity. The fact is that the paraffin content was not present in this production until after this secondary recovery method was installed and there is very little, if any, indication of oil seepage around the pond dikes, and inasmuch as there are from 500 to 800 barrels of water daily pumped from the pond (fig. 15) the possibility of oil loss is ridiculous.

(Figure 15 photographed.)

As alleged, has an open pit or pond and the water effluent from the flow tank, which contains an appreciable quantity of oil, is detained until the remaining emulsion is resolved by weathering and sunlight treatment. The oil is then skimmed from the surface of the water and returned to storage. It is also alleged that from 300 to 450 barrels of oil are skimmed from the pond each month; however, the fact is the amount of oil treated in this method does not exceed 150 barrels per month and is not 300 to 450 barrels as alleged.

A citation of this type of waste, considering the very small production returned, which incidentally is production which would not be recovered without secondary water flooding methods, is so trivial that if these instances are to be cited as avoidable waste, since they are admitted to exist throughout the stripper area and since the only remedy would be a complete shut-down of all the wells with the attendant loss of production and oil left in the ground unrecovered, certainly constituting underground waste, we cannot believe that the Department of Interior expects a complete shut-in of these 2,500 or more wells.

(Figure 16 page 45, exhibit B.)

Shows that a small pool of oil is the result of a poorly repaired lead line. This condition was corrected several months ago, before any suggestion was made by the Bureau of Mines and does not exist at the present time. This was understandingly an accidental condition and such conditions are always corrected by the operators themselves as soon as conveniently possible.

Bird Creek field—Tulsa County

The allegation states that in the Bird Creek area, 5 producing wells in the Burgess sand, at an approximate depth of 1,200 to 1,300 feet, produce 11 barrels per day. Apparently this lease is known as Ray M. Collins—Lake lease, located near the town of Sperry, Okla., and was drilled some 20 or 25 years ago. Several of these wells are located in what is known as the Sperry Lake and during heavy rains the wells are sometimes forced to shut down because of high water and occasionally a very small amount of crude is washed near the battery. The discoloring of the ground around the battery tanks is the result, primarily, of water from the lake instead of oil and the tanks are in fairly good condition; but to install the type of tanks as alleged in this allegation would be an utter economic impossiblity on the basis of a total production of only 11 barrels per day, and then only when all of the wells can be produced. Furthermore, the small amount of gas this lease is producing is being completely utilized on the property.

Broken Arrow—Tulsa County

The undisclosed well referred to in this allegation apparently is in the NE NE NE of sec. 10, 18 N., 15 E., drilled some 17 years ago to a total depth of approximately 1,100 feet, and was plugged back to approximately 500 feet with no indication of gas or oil. The allegation states that the well has been flowing salt water for years and contaminates surface streams in the locality and it is bubbling gas, which is injurious to the reservoir pressure in this area, as indicated in figure 18. The fact is this is a fresh water well and is being used for livestock and domestic purposes. The water is being trapped in a small ravine close by and is not injurious or hazardous to the surrounding area. There are no indications of gas escaping from this well and since there are no producing oil or gas wells in a 3 mile radius, an allegation of this nature is erroneous and misleading.

Wagoner area—Wagoner County

The undisclosed well cited in the allegation apparently is the French Bros. Drilling Co.—Hall No. 1, in sec. 20, 18 N., 17 E. In December 1939, the operator of this well was cleaning out the old well that was originally abandoned and plugged as a nonproducer in 1917. The well was cleaned out to a total depth of 735 feet and we find that in completing the well, the operator incurred some unavoidable difficulties in installing a 6⅝-inch packer. After a period of 4 or 5 days, the packer was properly set and the well completely shut in until the Oklahoma Natural Gas Co. made pipe-line connection in January 1940, for gas purchases, of which said purchases did not exceed 25 percent of the capacity of the well.

The second undisclosed well in Wagoner County, in sec. 16, 11 N., 17 E., is operated by G. F. Gartner. This well was completed November 29, 1939, and a packer was set and completely shut off all of the shale gas. The well also produced considerable amount of water, which is necessary to form the shale gas in this area or any other shale gas area.

The well was shut in from November 29, 1939 to December 4, 1939, at which time it was opened and apparently died as far as gas was concerned and was left open the greater part of December 4, which finally resulted in the unloading of water which had been pressed back into the shale from the time it was originally shut in. It was opened on December 5, 6, and 7 in order to bring the gas back without swabbing, but the results did not materialize. On December 8, a separator was set in order to segregate the gas and water for domestic and drilling-lease purposes, and we find that at no time this well was permitted to remain open other than the above-mentioned dates.

Muskogee area—Muskogee County

The first part of this allegation apparently referred to the Tidal Oil Co. property in what is known as the Timber Range pool; the allegation being that oil is stored in nonvaportight tanks because the operators believe that evaporation losses are negligible as the oil stands in them no longer than 1 week. This statement is erroneous. After a thorough investigation, we find that there are 15 separate leases and 68 producing wells in this area and on these leases there are 10 wooden tanks and 13 steel vaportight tanks installed. The wooden tanks are all in good condition and are practically as vaportight as the steel tanks.

Another allegation in the Muskogee area is the W. B. Pine lease in sec. 16, 14, 17. It was charged that due to the heating treatment, the gravity is lowered 1°. This condition was only occasioned during extreme cold weather and is not true of the regular heating processes in which this oil is treated. The same explanation is applicable to what we presume from the allegation to be the J. M. Foltz property in sec. 16, 14, 17. Furthermore, waste created by the loss of 1°, as mentioned above, is ridiculous. We might add that there is no method known by which emulsified oil can be separated from the water without a loss of one or more degrees of gravity. A heating treatment whether natural or artificial is necessary in this procedure. Any process of condensation for recovery of these vapors in areas such as this, or any other similar area, would be impracticable and impossible. The mere fact that this allegation was made demonstrates that the author had little or no knowledge of this type of operation.

Creek County

The allegation with reference to the 35-year-old Glenn Pool stripper-well area is correct. It is also true that there are a number of cases where there are small amounts of gas that have escaped to the air where it is impossible and impracticable to return this gas to the sand because its limited quantity would produce no effect. Furthermore, in these cases, it is neither practical nor economical to build pipe lines to gather these small amounts of gas for industrial purposes.

WASTE ATTENDING DESALTING OF CRUDE PETROLEUM

The only answer that can be given to this allegation without going into detailed technological analysis is that this is a salvage process for a product which would otherwise be useless and worthless. Economics, naturally, must enter into it and on the older properties it is impossible and uneconomical to equip with modern expensive vaportight equipment. The maximum loss claimed is 5 percent and we challenge that this is an extremely low loss in any salvage process in almost any industry.

SUMMARY

We find, after a thorough investigation, that the allegations are erroneous and and do not prove avoidable waste.

The greater part of these cases cited were inspired by routine daily and weekly reports contained in trade journals and the daily newspapers, which are classified as "spot" information subject to correction and considered informative but not necessarily complete and accurate at the moment. Their use in the instance by the Bureau of Mines is thoroughly misleading, since it is apparent that only a few of the total allegations made were actually investigated upon the ground. In fact, these misleading accusations, like those made in certain broadcasts by the Department of the Interior, were picked instances of practices of the past; yet they were disseminated in the light of present knowledge and practices as if such conditions actually prevailed today. Undoubtedly, in the early production practices there was some waste, which is discernible in retrospect, as has been the case in all human endeavors. Nevertheless, we assert and feel that the allegations referred to are but feeble efforts to discredit the administration of the Oil and Gas Conservation Department of Oklahoma by the proponents of this bill.

(At the request of some interested parties, the committee inserts herewith letter in the form of report from the General Counsel of the Independent Petroleum Association of America.)

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA,
Washington, D. C., March 26, 1940.

REPORT NO. 250

Mr. FRANK BUTTRAM,
President, Independent Petroleum Association of America.

The Senate is discussing H. J. Res. 407, the resolution for a 3-year continuance of the Trade Agreement Act. The question of the propriety of including any of the four excise taxes of 1932 in trade agreement negotiations entered the debate during the first day the resolution was up. Many amendments to the act have either been proposed or are being considered by a number of Senators. Among these is an amendment similar to the one proposed by Congressman Wesley E. Disney of Oklahoma in the House which would exempt these excise taxes from inclusion in any trade agreement to be negotiated. The debate is expected to continue throughout the week.

HEARING ON NATURAL GAS REGULATION

The Federal Power Commission has given our association permission to file a brief on the proposal of counsel in the Commission to regulate sales of natural gas by producers when it may enter into interstate commerce. Because of time limitations placed upon the Commission itself, it was only able to grant us until March 27 to file this brief. In view of the importance of the issues involved it has been decided that a brief properly covering the subject could not be prepared in the time allowed, therefore, we are not filing one at this time.

WAGES-HOURS REGULATION

The Wages-Hours Division of the Department of Labor will hold a hearing April 10 at which proposals may be made for the amendment of the regulations defining executives, administrators or professional officers, in the wholesale distributive branches of business. Any interested in opposing or proposing any amendment must file not later than April 3 notice of intention to appear.

DISTURBING CONDITIONS IN THE INDUSTRY

There are disturbing conditions in the present situation of the petroleum industry. What these are and their causes might be studied by the entire industry. We have excessive stocks of refined products. We have an increasingly oversupply of above-ground crude. We have excessive runs to stills. We have a great increase in imports. All these threaten the stability of the industry and undermine the conservation program. We appear to be moving toward a situation much like that which in August 1939, made necessary a shut-down of production in some States in order to correct the same condition we are now creating. The situation deserves careful thought and analysis.

WHERE ARE THE PRINCIPAL SOURCES OF DISTURBANCE?

(1) Illinois is increasingly exceeding what is believed to be a proper share of production.

(2) Texas during the first 2 weeks in March (the latest available figures), had a daily production of approximately 159,000 barrels over the Bureau of Mines' estimate of that State's share of demand.

(3) Imports of petroleum competing with domestic products for the first 2 months of the present year have exceeded such imports for the same period in 1939 by 66,000 barrels per day or 60 percent.

(4) Our gasoline stocks on March 16 amounted to 100,600,000 barrels, the highest they have ever been by 7,000,000 barrels.

WHO CONTROLS THESE SITUATIONS?

(1) Three, possibly four, major companies are responsible for excessive and wasteful production in Illinois, notably from the Devonian formation.

(2) It is reported that the Railroad Commission of Texas, in determining the allowable it finally fixed, considered "the purchasers' nominations of 1,900,000 barrels a day * * *." The purchasers are the major companies. Such nominations made at a time when Texas oil was already going to storage, encourage excessive allowables.

(3) Two major companies are responsible for the greater part of all the imports of petroleum products into this country.

(4) Most of the gasoline storage is held by a few major companies.

WHAT IS THE PURPOSE?

Is there any purpose in the creation of the present situation by those who are responsible for it or is that situation merely the result of overenthusiasm and poor judgment? Does this evidence an intentional raid upon the smaller units in the industry or is it merely an attempt to secure additional outlets for the products of a few large companies, including the products of increasing imports from abroad?

A QUESTION

It seems inconceivable that these companies are intentionally leading us into Federal control yet that is the effect. Some have suggested that some major companies would be willing to force Federal control of the oil industry under the belief that through their close and integrated organization they would receive more favorable treatment than they could receive under regulation by State officials more responsive and more responsible to the people.

If this should be the case, then the officials of these companies should be complimented upon their perfect coordination in moving toward that goal.

Very truly yours,

RUSSELL B. BROWN.

(During the testimony of Mr. E. H. Moore, some questions regarding his operations in Santa Maria, Calif., were asked. On February 27, 1940, Mr. Moore wrote the following letter:)

E. H. Moore, Inc.,
Tulsa, Okla., February 27, 1940.

Hon. William P. Cole,
Chairman, Subcommittee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.

Dear Mr. Cole: I was puzzled by a question which you asked me when I testified before your committee in opposition to H. R. 7372, concerning my operations in Santa Maria, Calif. You evidently must have gotten the impression while you were in California that I was producing oil and storing it in earthen pits.

When I was before you it never occurred to me that I am at the present time engaged in recompleting a well on this property, known as Union Sugar No. 11. This well was completed about a year ago, and shut in because of market conditions. I discovered that mud had been left on the sand, and that the liner had to be pulled out and the well cleaned up again. I began this operation about 90 days ago, and if you visited the property you no doubt observed that this well was pumping into the slush pit. That was being done because mud was still coming from the sand.

As I stated while I was before you, I never produced any oil into the earthen pits except during the process of putting a well on production, which necessitates cleaning the well of the rotary mud. I have on this lease five 2,000-barrel tanks. I think these tanks are practically all full. The working conditions there require that the oil be stored and heated to facilitate the running of the oil into the pipe line, but the tanks in which the oil is stored are modern steel tanks with vapor-proof roofs.

I only write this letter to correct any impression you may have had with reference to the operation of this property. I want to take this occasion to express my appreciation for the courtesy and patience that you and other members of the committee showed for us in presentation of our opposition to the above-mentioned bill. I know the oil industry shares in my appreciation.

With kindest regards, I beg to remain,

Yours very truly,

E. H. Moore.

(To which I replied by letter of February 29, 1940, as follows:)

February 29, 1940.

Mr. E. H. Moore,
Thompson Building, Tulsa, Okla.

Dear Mr. Moore: I am glad you wrote me as you did in your letter of the 27th instant because truly your testimony did not coincide with some reports I had as to conditions in the vicinity of Santa Maria, Calif., or possibly I should say conditions as described to me off the record in California in the vicinity of your operations were not as free from visible waste or storage in open pits as your answers to my questions would imply.

I am enclosing some photographs of oil thrown into earthen reservoirs in the Santa Maria fields. These pictures, I presume, you will recognize as the McGuire Refinery but there are other similar conditions, I believe, in the same field. If you will kindly return these pictures with such comment as you care to make about them, at the same time send me pictures of the operations of your own wells, to which you refer, I will appreciate that also.

Your kind reference to the committee was brought to the attnetion of the members and they have all asked that I thank you very much for your expression of confidence and thanks for the way in which you were received by the committee.

Very sincerely yours,

William P. Cole, Jr.

(The photographs referred to in my letter are attached hereto:)

(Mr. Moore's reply to my letter of February 29, 1940, was received on March 12, 1940, and is filed herewith:)

E. H. Moore, Inc.,
Tulsa, Okla., *March 12, 1940.*

Hon. William P. Cole, Jr.,
Chairman, Subcommittee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.

Dear Mr. Cole. I have just returned to my office, after having spent the last 10 days in California, and find your letter of the 29th ultimo with reference to my letter to you of the 27th of February concerning my testimony before your committee with reference to operations in the Santa Maria field in California.

I note your photographs of the McGuire Refinery in the Santa Maria area, which I presume is a correct reproduction of conditions as to the disposition of the residue from their refinery. I have never been to the refinery, but I am told that they take off the gasoline and then dump the residue into the pits. This is a bad practice, and a wasteful one, and there is no valid excuse for such procedure. The only excuse that could possibly be made is that they are trying to make a little money out of the gasoline that they extract from the crude, with the hope that at a future time they can utilize the sludge, or residue, in some other way. The condition in the Santa Maria field is that the oil is of asphaltic base, low gravity, and contains only about 17 percent of gasoline that can be extracted by topping. A plant that would utilize efficiently all the elements in this crude would be more expensive than an individual or a weak financial concern could afford; but I don't claim that as a justification for a wasteful practice.

I am not advised as to whether this residue that has been dumped on the ground or into earthen pits can yet be used or not. I am inclined to think it can. My present information as to the products that can be procured from this crude is that they consist of gasoline, fuel oil, and road oil. The oil contains sulfur, and makes it an expensive refining operation to make the best products from it, and offers a problem not yet solved by refining equipment, but it is thought that it is nearing a solution by inventive processes now under way.

I regret to say that I have no photographs of any operations of my own, but do repeat that I have run no oil into earthen pits except as stated in my letter of February 27. That oil has undergone very little waste. It will be treated and picked up and put into the steel storage that is used on my property, and is what I call "field storage," or storage tanks from which the pipe lines run the oil. The pumping of this oil into the pit was not for want of steel storage, but for the purpose of putting it in condition so it could be treated and utilized after the mud and water had been precipitated from it. Any inference that you may have obtained with reference to my operations tending to show that they are wasteful is unfair to me, not being based upon facts and not being sustained by existing conditions. Anyone looking at my property that has sufficient experience to be a judge would tell you that the operation is efficient, and not more wasteful than is necessary under the conditions as they exist there now.

I take pleasure in returning to you the photographs, as per your request, and thank you very much for your attention in the matter.

With kindest regards, I beg to remain

Yours very truly,

E. H. Moore.

(At the request of John E. Benton, Esq., general solicitor for the National Association of Railroad and Utilities Commissioners, the following letter and statement is filed herewith:)

National Association of Railroad and Utilities Commissioners,
Washington, D. C., February 27, 1940.

Hon. William P. Cole, Jr.,
Chairman, Subcommittee on H. R. 7372,
House of Representatives, Washington, D. C.

Dear Sir: I am personally handing to you the attached copy of a statement on behalf of the National Association of Railroad and Utilities Commissioners, which I desire to make in opposition to the passage of H. R. 7372.

I ask leave to present the same orally, or to have the same printed as a part of the hearing in the same size type, and otherwise as if presented orally.

Very truly yours,

John E. Benton,
Solicitor General.

STATEMENT OF JOHN E. BENTON, GENERAL SOLICITOR, NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS

Mr. Chairman, my name is John E. Benton. I am the general solicitor of the National Association of Railroad and Utilities Commissioners. My office is at No. 7413 New Post Office Building in this city. I appear here on behalf of that association generally, and in particular on behalf of the State commissions exercising jurisdiction to regulate the production of petroleum, to express opposition to the passage of H. R. 7372.

The National Association of Railroad and Utilities Commissioners is an organization which represents in its membership the regulatory commissions of all the States of the Union except Delaware, which has no commission, and New York, the commissions of which at this time are not actively identified with the association.

The association maintains an office in Washington, D. C., to provide representation of State commission interests before the Interstate Commerce Commission and other Federal commissions which regulate public utilities and transportation agencies, and other business enterprises, which are subject also to State regulation. The State commissions represented in the association are likewise represented through their Washington office, when they so desire, upon legislation pending before Congress, which may affect their jurisdiction. Upon such legislation, the legal representatives of the association may appear before committees at hearings either for a particular commission or particular commissions, or by direction of the appropriate officers of the association, for the association generally.

The Federal regulatory commissions are represented in the membership of the association, but it is understood that upon matters of legislation in which they have an interest, they appear and speak for themselves, if they wish to be heard. What is said by representatives of the association at congressional hearings on legislation is said solely upon behalf of the State commission membership of the association, for which alone they undertake to speak.

Concerning H. R. 7372, at a joint meeting of the executive committee of the association, and of the committees on cooperation and legislation, held in this city on February 9, 1940, upon motion of Hon. Lon Smith of the Texas commission, seconded by Hon. A. S. J. Shaw of the Oklahoma commission, the following resolution was adopted:

> *Resolved*, That the committee on legislation and the general solicitor do everything within their power to resist the passage of H. R. 7372, providing for Federal regulation of the production of oil.

Mr. Chairman, in appearing here to present this resolution and to oppose the passage of this bill, I am acting under the direction of Hon. H. Lester Hooker, chairman of the committee on legislation, as the spokesman for that committee. An important hearing before his own commission in Virginia makes it impossible for Chairman Hooker to be here. I ask that what I say be considered as said for that committee, in compliance with the mandate of that resolution.

There is nothing that the committee on legislation and the general solicitor can do to resist the passage of H. R. 7372 except to come before this committee—and before any other committee holding any hearing on that bill—to present the resolution, adopted in the name of the association by its responsible standing committees, and to state to you the basis for the opposition which that resolution voices.

There were present at the joint committee meeting, at which the resolution was adopted, 21 of the 25 State commission members of the executive committee, 8 of the 11 members of the committee on cooperation, and 8 of the 11 members of the committee on legislation. I make mention of the attendance at that meeting so that this committee may be advised of the representative character of the meeting.

Those who expressed opposition to this bill when the resolution was under consideration did so upon the ground tht Federal regulation of oil production would be an intrusion by the National Government into matters which are local in character, and properly subject to regulation by the States and not by the Federal Government.

The position taken by the association in the adoption of the resolution, which I just read, is in line with the position which it has consistently held for many years. At its annual convention in 1929, the association adopted a resolution which has ever since represented the policy of the State commissions with respect to Federal legislation. That resolution was as follows:

> *Resolved*, That we are unalterably opposed to any enlargement of Federal authority by the creation of new agencies or the enlargement of the authority of present agencies whereby the regulatory authority of the State commissions would be interfered with in a field where they are now adequately functioning.

That resolution has been many times presented to this committee; and at this time, on behalf of the State commissions represented in our association, I want to express to this committee and to Congress, our appreciation of the care with which the regulatory legislation enacted in recent years has been famed to avoid the destruction of the powers of State regulatory agencies.

In presenting this resolution, I wish to say at the outset that with respect to the manner of conducting the business of oil production I can give this committee no information. With respect to the details of State laws granting jurisdiction to State commissions to regulate oil production, I can do little better. Not many State commissions exercise such jurisdiction; and I have had no contact with that branch of State regulation. I believe, however, that I can state to you what the members of the association generally desire to have stated. I shall state it as briefly as possible.

The State commissions believe that the 1929 resolution of their association, which I read a few moments ago, expresses a sound principle of government. They believe that regulation of oil production is a local activity, which the States can regulate, and are regulating. They believe that such regulation can be enforced more understandingly by the States than by the Federal Government, and at vastly less cost—both as respects governmental expenditures in regulatory activities, and as respects costs resulting to the industry.

Federal regulation is unavoidably long-distance regulation. Any official or commission exercising regulatory power over any industry in all of the States of the entire country can do so only by building up a great organization here in Washington. Such an organization unavoidably becomes complex and cumbersome in its operation. Its regulations and requirements imposed upon the industry are numerous and costly to comply with. Whatever information it is thought may be useful as to any one of a class of operators, in any contingency, is required to be preserved in accounts and records by all operators in that class, and to be covered by periodic reports, so that the information may be compiled in Washington, and held available for use in the uncertain event that it may ever be needed.

The mere business of understanding and complying with a multitude of complex and detailed regulations and requirements represents a burden and a costly handicap to business for small operators. In short, Federal regulation, by reason of the bastness of the field which it must cover, unavoidably tends to become cumbersome and oppressive if extended to cover local operations.

Furthermore, Federal regulation, when so extended into the local field, is destructive of the power of the States to regulate their local affairs. It usurps functions which, under our dual form of government, were designed to be left to the States.

This is unavoidable, when Federal power is extended, because Federal power, where it exists, is dominant. State power in the local field can be preserved only by so limiting Federal regulation as to leave the local field outside the jurisdiction of any Federal regulatory agency.

To the extent that the Federal Government enters any field, every other government is necessarily excluded. This bill has been drawn with a clear understanding of that fact. It is designed to make the Commissioner of Petroleum Conservation dominant. Section 11 authorizes the Commissioner to be polite to State conservation officers—but in no way protects or seeks to preserve the existing powers of such State officers.

In that, the bill is logical. Two Governments cannot each regulate the same act. There cannot be two rules for oil well spacing, or for permissible production, or for permissible escape of gas, or regulating the flooding of wells, and so on.

In other words, it is impossible for a Federal regulator and a State regulator to be both exercising power to control the same matters. That was obvious to the man who wrote this bill, and will be obvious to Congress. If you enact this bill, it will be because you conclude that it is desirable to take the power to regulate oil production away from the States, and exercise it through a Federal agency; and because you think the Federal Constitution gives you the power to do that.

I want to say something about the power of Congress to regulate business of this character. I shall not undertake to tell you how far you can go in providing for regulation of petroleum production, and have your legislation sustained by the supreme tribunal of the Nation. I do not know. You do not know.

The fact that you do not know, places a grave responsibility upon you to consider with the very greatest care whether legislation proposed for passage would, if enacted, operate to deprive the States of powers which, under our plan of government, and in conformity with the spirit of our Constitution, ought to be left to the States.

Congress may have become, to an extent not thought of a few years ago, the guardian of our form of government, and of the right of the people of this country to control their local affairs through their local governments.

Only as recently as January 29, 1940, the Supreme Court of the United States, in an opinion written by Mr. Justice Frankfurter in the *Pottsville Broadcasting Co. case*, denying the power of the court to interfere with the legislative action of an agency of Congress, used this language:

> But the courts are not charged with general guardianship against all potential mischief in the complicated tasks of government. *The present case makes timely the reminder that legislatures are ultimate guardians of the liberties and welfare of the people in quite as great a degree as the courts.* [Italics supplied.]

The right to control local affairs through local government is a precious part of the heritage of the American people. It is not a matter of sentiment only. It is a matter of practical importance. Local government, and the agencies of local government, can be watched, understood and controlled by the people in a way that the people cannot watch, understand, and control the working of a far off Federal government and its national agencies. Also, the imposition of governmental power, to control the activities of the people in their local business, can be more understanding, and better adapted to their particular local needs than regulations imposed by Federal bureaus in Washington for Nation-wide application, however well intentioned the administrators of those Federal bureaus may be.

Your first consideration, in connection with this bill, will accordingly be, and ought to be, whether the assumption of regulatory control over petroleum production within the several States is a proper Federal function, consistent with the plan and purpose of the Constitution, under which our country has grown to be the leading Nation in the world, the government of which is stable, because the people in general are satisfied that the powers of government are so distributed and exercised as to protect and preserve their right to live, and to do business, and to enjoy the liberties of a free people.

Perhaps it will help you to do that if I advert briefly to a fee decisions of the United States Supreme Court, not for the purpose of arguing dogmatically that those decisions determine that this bill is clearly unconstitutional, but to show what the understanding of that tribunal has been and is, as to the character of the business operations which this bill aims to place under Federal regulation.

This proposed legislation, if it can be sustained as within the constitutional power of Congress, must be sustained under the commerce clause. I disregard the attempt in section 2 of the bill to camouflage the legislation as a defense measure, to be enacted in the exercise of the war power of Congress. The "power to lay and collect taxes * * * to * * * provide for the common defense," found in section 8 of article I of the Constitution, is a taxing power only. This is not a tax measure.

Whatever extraordinary power may be exercised by the Congress under any grant of war power implied in any other provision of section 8, such extraordinary power exists only while war is in progress or threatened. It does not enable the Congress in time of peace to make unconstitutional legislation constitutional by labeling it as enacted "for the national defense." As Chief Justice Chase said in *Ex Parte Milligan* (4 Wallace 139, 142) "When peace exists, the laws of peace must prevail."

If you find any constitutional justification for this legislation, it will not be founded upon pretense, but upon your conclusion that it constitutes a regulation of interstate or foreign commerce, which is within your power under the commerce clause.

What this bill undertakes to do is to regulate the production of petroleum. The commissioner, appointed under the bill, if it is enacted into law, is to promulgate regulations, observance of which is to be made obligatory upon all producers within the fields to which the regulations apply. The question is whether the production of oil has such relation to interstate commerce that it may be regulated under the commerce clause.

Under past decisions of the United States Supreme Court, and under the plain words of the commerce clause understanding words according to their common acceptation in the speech of the people, such production cannot be held interstate commerce within the reach of the regulatory power of Congress under that clause.

What is it that Congress, by the commerce clause, is empowered to regulate? It is "commerce with foreign nations and among the several States." Commerce, in its primary sense, is the buying and selling and exchange of goods and articles of trade; and, in a broader sense, it embraces intercourse of all sorts between different people. It is intercourse and trade "among the several States," and between this country and foreign countries, which Congress may regulate, and not any activity or business confined to a single State, such as manufacturing or the production of goods. Production is necessarily local. It cannot be "among" the several States or "with" foreign nations.

More than 50 years ago, when called upon to determine whether a statute of the State of Iowa, which suppressed the production of intoxicating liquors designed for shipment in interstate commerce, constituted an unconstitutional burden upon or interference with such commerce, the United States Supreme Court emphasized the fact that the language of the commerce clause was to be understood according to its natural sense, and that, so understood, it could not be treated as embracing the production of commodities. On this point, the Court said:

> "As men whose intentions require no concealment generally employ the words which most directly and aptly express the ideas they intend to convey, the enlightened patriots who framed our Constitution, and the people who adopted it, *must be understood to have employed words in their natural sense and to have intended what they have said.*" *Gibbons* v. *Ogden, supra.*
>
> No distinction is more popular to the common mind, or more clearly expressed in economic and political literature, than that between manufactures and commerce. Manufacture is transformation—the fashioning of raw materials into a change of form for use. *The functions of commerce are different. The buying and selling and the transportation incidental thereto constitute commerce;* and the regulation of commerce in the constitutional sense embraces the regulation at least of such transportation. The legal definition of the term as given by this court in *County of Mobile* v. *Kimball* (102 U. S. 691, 702) (26: 238, 241) is as follows: "*Commerce with foreign nations and among the States, strictly considered, consists in intercourse and traffic,* including in these terms navigation and the transportation and transit of persons and property, as well as the purchase, sale, and exchange of commodities." *If it be held that the term includes the regulation of all manufactures as are intended to be the subject of commercial transactions in the future, it is impossible to deny that it would also include all productive industries that contemplate the same thing.* The result would be that Congress would be invested, to the exclusion of the States, with the power to regulate, not only manufacture, but also agriculture, horticulture, stock-raising, domestic fisheries, mining—in short,

> every branch of human industry. For is there one of them that does not contemplate, more or less clearly, an interstate or foreign market? Does not the wheat grower of the Northwest, and the cotton planter of the South, plant, cultivate and harvest his crop with an eye on the prices at Liverpool, New York, and Chicago? The power being vested in Congress and denied to the States, it would follow as an inevitable result that the duty would devolve on Congress to regulate all of these delicate, multiform, and vital interests—interests which in their nature are, and must be, local in all the details of their successful management. [Italics supplied.] (128 U. S. 347, 350.)

Later, in 1922, in *Heisler* v. *Thomas Colliery Company* (260 U. S. 245), the Court was asked to hold a production tax on coal, under State law, unconstitutional, as an interference with interstate commerce. Rejecting that contention, the Court said:

> The reach and consequences of the contention repel its acceptance. If the possibility, or indeed, certainty, of exportation of a product or article from a State, determines it to be in interstate commerce before the commencement of its movement from the State, it would seem to follow that it is in such commerce from the instant of its growth or production; and in the case of coals, as they lie in the ground. The result would be curious. *It would nationalize all industries; it would nationalize and withdraw from State jurisdiction and deliver to Federal commercial control the fruits of California and the South, the wheat of the West and its meats, the cotton of the South, the shoes of Massachusetts, and the woolen industries of other States at the very inception of their production or growth;* that is, the fruits unpicked, the cotton and wheat ungathered, hides and flesh of cattle yet "on the hoof", wool yet unshorn and coal yet unmined, because they are, in varying percentages, destined for and surely to be exported to States other than those of their production. [Italics supplied.]

In *Utah Power and Light Co.* v. *Pfost* (286 U. S. 165), decided in 1931, the Court, in a unanimous decision, holding the generation of electricity subject to State taxation, notwithstanding its instantaneous transmission in interstate commerce, said:

> We are satisfied, upon a consideration of the whole case, that the process of generation is as essentially local as though electrical energy were a physical thing, and to that situation we must apply, as controlling, the general rule that commerce does not begin until manufacture is finished, and hence the commerce clause of the Constitution does not prevent the State from exercising exclusive control over the manufacture. * * * Without regard to the apparent continuity of the movement, *appellant, in effect, is engaged in two activities, not in one only. So far as it produces electrical energy in Idaho, its business is purely intrastate, subject to State taxation and control.* In transmitting the product across the State line into Utah, appellant is engaged in interstate commerce, and State legislation in respect thereof is subject to the paramount authority of the commerce clause of the Federal Constitution. [Italics supplied.] (286 U. S. 165, 181, 182.)

In the case of *Champlin Refining Co.* v. *Oklahoma Corporation Commission* (286 U. S. 210), also decided in 1931, in sustaining the validity of proration orders made by one of the State commissions, for which I am now appearing, the Court said:

> It is clear that the regulations prescribed and authorized by the (State) Act and the proration established by the commission *apply only to production* and not to sales or transportation of crude oil or its products. *Such production is essentially a mining operation and therefore is not a part of interstate commerce even though the product obtained is intended to be and in fact is immediately shipped in such commerce.* [Italics supplied.] (286 U. S. 210, 235.)

In the *Carter Coal Company case* (298 U. S. 238), involving the so-called Guffey Coal Act, decided in 1936, the Court dealt with a statute in some respects much like that here proposed. The character of the act, and the findings set forth therein, as a basis for the assertion of Federal jurisdiction, appear from the statement at the opening of the majority opinion of the court, as follows:

> Section 1, among other things, further declares that the *production and distribution by producers of such coal bear upon and directly affect interstate commerce, and render regulation of production and distribution imperative for the protection of such commerce;* that certain features connected with the production, distribution, and marketing have led to waste of the national coal resources, disorganization of interstate commerce in such coal, and *burdening and obstructing interstate commerce therein;* that practices prevailing in the production of such coal *directly affect interstate commerce and require regulation for the protection of that commerce;* and that the right of mine workers to organize and collectively bargain for wages, hours of labor, and conditions of employment should be guaranteed in order to prevent constant wage cutting and disparate labor costs detrimental to fair interstate competition, and *in order to avoid obstructions to interstate commerce* that recur in industrial disputes over labor relations at the mines. These declarations constitute not enactments of law, but legislative averments by way of inducement to the enactment which follows. [Italics supplied.] (298 U. S. 280.)

It will be noted that in the Guffey Coal Act, as in H. R. 7372, effort was made to support an assertion of Federal power to regulate coal production by declaring such regulation necessary for the protection of interstate commerce. Notwithstanding the findings recited, however, the court held the act unconstitutional, affirming again the lack of power on the part of Congress to control production. Further in the majority opinion, the Court said:

> Since the validity of the act depends upon whether it is a regulation of interstate commerce, the nature and extent of the power conferred upon Congress by the commerce clause becomes the determinative question in this branch of the case. The commerce clause vests in Congress the power—"To regulate commerce with foreign nations, and among the several States, and with the Indian Tribes." The function to be exercised is that of regulation. The thing to be regulated is the commerce described. In exercising the authority conferred by this clause of the Constitution, Congress is powerless to regulate anything which is not commerce, as it is powerless to do anything about commerce which is not regulation. We first inquire, then—What is commerce? * * * In *Gibbons* v. *Ogden* (9 Wheat. 1, 189, 190; 6 L. ed. 23, 68), Chief Justice Marshall said: "Commerce, undoubtedly, is traffic, but it is something more; it is intercourse. It describes the commercial intercourse between nations, and parts of nations, in all its branches, and is regulated by prescribing rules for carrying on that intercourse. * * *" *As used in the Constitution, the word "commerce" is the equivalent of the phrase "intercourse for the purposes of trade,"* and includes transportation, purchase, sale, and exchange of commodities between the citizens of the different states. [Italics supplied.] (298 U. S. 297–298.)

Reviewing a great number of decisions the opinion proceeds:

> A consideration of the foregoing, and of many cases which might be added to those already cited, renders inescapable the conclusion that the effect of the labor provisions of the act, including those in respect of minimum wages, wage agreements, collective bargaining, and the Labor Board and its powers, *primarily falls upon production and not upon commerce;* and confirms the *further resulting conclusion that production is a purely local activity.* It follows that none of these essential antecedents of production constitutes a transaction in or forms any part of interstate commerce. * * * Everything which moves in interstate commerce has had a local origin. Without local production somewhere, interstate commerce, as now carried on, would practically disappear. Nevertheless, the local character of mining, of manufacturing and of crop growing is a fact, and remains a fact, whatever may be done with the products. [Italics supplied.] (298 U. S. 304.)

In a separate opinion, the Chief Justice expressed the view that certain provisions of the bill might be sustained as applicable to the marketing of coal in interstate commerce. As to the regulation of production, however, he said:

> *But Congress may not use this protective authority as a pretext for the exertion of power to regulate activities and relations within the States which affect interstate commerce only indirectly. Otherwise,* in view of the multitude of indirect effects, *Congress in its discretion could assume control of virtually all the activities of the*

> *people to the subversion of the fundamental principle of the Constitution.* * * * The [labor] provision goes beyond any proper measure of protection of interstate commerce and attempts a broad regulation of industry within the State. [Italics supplied.] (298 U. S. 317–319.)

Justice Cardozo, Justices Brandeis and Stone concurring with him, expressed dissent from the majority opinion, holding that parts of the act were constitutional, and that whether the labor provisions of part III of the act transcended the power of Congress under the commerce clause, as held by the majority and by the Chief Justice, need not be considered. On this point, Justice Cardozo said:

> Analysis of the statute thus leads to the conclusion that the provisions of part III, so far as summarized, are separable from parts I and II and that any declaration in respect of their validity or invalidity under the commerce clause of the Constitution or under any other section will anticipate a controversy that may never become real. This being so, the proper course is to withhold an expression of opinion until expression becomes necessary.

I make this quotation from the dissenting opinion merely to show that no contention was made, even by the minority, that the provisions of the act regulating production were constitutional.

I might cite many other cases. Those to which I have referred, however, sufficiently illustrate the point I wish to make. There is no authority under the commerce clause justifying legislation by Congress for the regulation of the production of petroleum, as such, because production is not within the plain meaning of the term "commerce," and because the United States Supreme Court, from the earliest days, has held explicitly that production cannot be brought within the meaning of that term by construction.

Those who support this proposed legislation, however, hope that the legislation can, nevertheless, be sustained, not as a regulation of production, but as an exercise of the power to regulate interstate commerce. They rely upon more recent decisions of the Court in cases which arose under the Wagner National Labor Relations Act, and under the Agricultural Adjustment Act.

In the National Labor Relations Act, the Congress undertook to prevent certain unfair labor practices which it believed to operate to the injury of interstate commerce. The act described the practices denominated as "unfair," and established the National Labor Relations Board, to which jurisdiction was given to make orders to prevent "unfair labor practices affecting commerce." Commerce was defined to mean "interstate commerce," and the phrase "affecting interstate commerce" was defined to mean "either in commerce (as so defined) or burdening or obstructing commerce, or the free flow of commerce, or having led or tending to lead to a labor dispute burdening or obstructing commerce or the free flow of commerce."

The Labor Board, proceeding in conformity with the act, made an order directed to the Jones & Laughlin Co., affecting the employees of that company, engaged in the manufacturing of steel. The company resisted enforcement of the order, upon the ground that the act was an unconstitutional attempt to regulate matters subject to the exclusive regulation of the States.

In *National Labor Relations Board* v. *Jones & Laughlin* (301 U. S. 1), decided in 1937, the Court held the National Labor Relations Act constitutional, and the order valid. The basis for the decision appears from the following quotation from the opinion of the Chief Justice:

First. The scope of the act: The act is challenged in its entirety as an attempt to regulate all industry, thus invading the reserved powers of the States over their local concerns. It is asserted that the references in the act to interstate and foreign commerce are colorable at best; that the act is not a true regulation of such commerce or of matters which directly affect it but on the contrary has the fundamental object of placing under the compulsory supervision of the Federal Government all industrial labor relations within the Nation. * * * If this conception of terms, intent, and consequent inseparability were sound, the act would necessarily fall by reason of the limitation upon the Federal power which inheres in the constitutional grant, as well as because of the explicit reservation of the tenth amendment. * * * *The authority of the Federal Government may not be pushed to such an extreme as to destroy the distinction, which the commerce clause itself establishes, between commerce "among the several States" and the internal concerns of a State. That distinction between what is national and what is local in the activities of commerce is vital to the maintenance of our Federal system.* * * * We think it clear that the National Labor Relations Act may be construed so as to operate within the sphere of constitutional authority. The grant of authority to the Board does not purport to extend to the relationship between all industrial employees and employers. Its terms do not impose collective bargaining upon all industry regardless of effects upon interstate or foreign commerce. It purports to reach only what may be deemed to burden or obstruct that commerce and, thus qualified, it must be construed as contemplating the exercise of control within constitutional bounds. It is a familiar principle that acts which directly burden or obstruct interstate or foreign commerce, or its free flow, are within the reach of the congressional power. Acts having that effect are not rendered immune because they grow out of labor disputes. * * * Although activities may be intrastate in character when separately considered, if they have such a close and substantial relation to interstate commerce that their control is essential or appropriate to protect that commerce from burdens and obstructions, Congress cannot be denied the power to exercise that control. * * * Undoubtedly *the scope of this power must be considered in the light of our dual system of government and may not be extended so as to embrace effects upon interstate commerce so indirect and remote that to embrace them, in view of our complex society, would effectively obliterate the distinctions between what is national and what is local and create a completely centralized government.* Id. The question is necessarily one of degree. [Italics supplied.]

Other decisions under the National Labor Relations Act, and under the Agricultural Adjustment Act, need not be referred to. They rest upon the same basis as the decision in the *Jones & Laughlin case*, the power of the Federal Government to control activities which themselves do not constitute interstate commerce, to the extent that such control is found necessary as an incident to the regulation of interstate commerce, the power of Congress to regulate under the commerce clause being held to extend to the protection of interstate commerce from all injuries, however originating, and even though the exertion of the power may result in the exercise of a degree of regulation over matters which are not primarily subject to Federal control.

H. R. 7372 has been framed with the intent to bring it within the scope of the Jones & Laughlin decision, and the other decisions to which I have referred without citation. Without stopping to analyze the bill, I will say that it has been skillfully drawn. Whether it will meet the constitutional test, if you enact it, I do not undertake to say. It may do so, by reason of the findings it is proposed you shall incorporate therein, and by reason of the artful procedure which the bill provides that the Commissioner shall follow as a preliminary to the promulgation of his regulations.

Everyone who has studied the opinions of the United States Supreme Court for the last 2 or 3 years cannot have failed to observe that it has come to attach great weight to the findings of Congress, as bearing upon the constitutionality of legislation.

The very fact that by the device of these findings of fact, and by artful draftsmanship directing procedure, you may bring it about that this bill will be held constittuional, ought to redouble your solicitude not to enact it unless you are thoroughly confident that the findings of fact are true.

The Supreme Court places that injunction upon you. It says to you, in the unanimous opinion of Mr. Justice Frankfurter, from which I quoted earlier in my statement, that you, the Congress, "are ultinate guardians of the liberties and welfare of the people in quite as great a degree as the courts."

And in the Jones & Laughlin opinion, upon which the proponents of this bill rely, the duty of the Congress to refrain from extending Federal regulation into the field of local affairs, except when such extension is manifestly essential, is made very clear in this language of the Court:

> The authority of the Federal Government may not be pushed to such an extreme as to destroy the distinction, which the commerce clause itself establishes, between commerce "among the several States" and the internal concerns of a State. *That distinction between what is national and what is local in the activities of commerce is vital to the maintenance of our Federal system.* * * *
>
> Undoubtedly the scope of this power must be considered in the light of our dual system of government and may not be extended so as to embrace effects upon interstate commerce so indirect and remote that to embrace them, in view of our complex society, would *effectively obliterate the distinctions between what is national and what is local and create a completely centralized government.* Id. The question is necessarily one of degree. [Italics supplied.]

The obligation rests upon Congress to observe the Constitution, and rests more heavily today than ever before in the lifetime of any man now living.

Under the Constitution, local business is subject only to local regulation. That is true today and is thus emphasized in the very opinion upon which the proponents of this legislation rely. Congress cannot properly touch local business except to the extent that interference therewith by the Federal Government becomes necessary in an important way for the protection of interstate commerce.

The question which you have to determine is not whether the Federal Government could regulate the production of petroleum better than it is being regulated by the States. It is not whether there is preventable waste in such production. You may find that there is. The waste might be less or more under Federal regulation. Probably Federal regulation would cost more, and not be so satisfactory; but that is not the point.

The point is that the people who live in the several States of this Union under our Constitution have the right to be left in undisturbed control of their local affairs, unless you, as the "ultimate guardians" of the irrights and liberties, feel that it can be justly said that the States are managing any particular form of local business so badly that the results are and will be so injurious to interstate commerce that the right to local control ought to be taken away, and thereafter exercised by the Federal Government.

That decision, as respects this proposed legislation, can properly rest only upon injuries which you find actually do result to interstate commerce from waste, which you find actually exists, and will continue to exist under State regulation, which you find can and will be prevented by Federal regulation.

You will not misuse the great power that rests in you by regarding these findings, which you are asked to insert in this bill, for the purpose of destroying the right to local control, as a mere form of words, to be inserted in the act without regard to the truth.

Furthermore, in making your decision, you will regard the admonition of the Supreme Court of the United States, in this very Jones & Laughlin opinion, that you must keep in mind our dual system of government, and the vital necessity of avoiding such a course as would "obliterate the distinction between what is national and what is local, and create a completely centralized government."

The Court says, in that opinion, that there is an extreme to which the authority of the Federal Government "may not be pushed," but what the extreme limit of the legislative power of Congress under the commerce clause may be found to be no one can say. Former decisions of the Court afford no dependable basis for determination. The rule of *stare decisis*, like the old gray mare, "ain't what she used to be." Mr. Justice Frankfurter, in an opinion of the United States Supreme Court, handed down in *Helvering* v. *Hallock* on January 29, last, said:

> We recognize that *stare decisis* embodies an important social policy. It represents an element of continuity in law, and is rooted in the psychologic need to satisfy reasonable expectations. But *stare decisis* is a principle of policy and not a mechanical formula of adherence to the latest decisions * * *. This Court, unlike the House of Lords, has from the beginning rejected a doctrine of disability at self correction.

In times gone by, Members of Congress have perhaps felt free to leave questions of constitutionality to be determined by the United States Supreme Court, feeling assurance that the Court would protect the public right to preservation of local government. If it be true, however, that the Court now gives to Congress a free rein, and makes Congress the guardian of the people's rights and liberties, you cannot now feel any such sense of freedom.

This is a critical period in our country's history. I do not mean that the patriotic purposes of Congress are not to be trusted, if constitutional restraints have become nonexistent or lax. I mean that as the power of Congress to legislate without strict judicial review increases, the imperative necessity of congressional restraint in legislation must be realized, or irretrievable harm will result.

I do verily believe that the preservation of our dual form of Government, as we have known it, with a free people governing themselves locally, rests in the hands of Congress. Only Congress can take away the rights of local government, which the people now have and exercise. If those rights shall be taken away, even though inadvertance and failure to realize the results of legislation, they never will be restored; and the Government which our fathers founded, and under which we have lived, will be gone forever.

Most of the States, Mr. Chairman, have vested power to regulate the production of petroleum in agencies for this special purpose, such as the board of conservation in Arkansas, the oil conservation commission in New Mexico, and the commissioner of conservation in Louisiana. Such officials are not represented in the National Association of Railroad and Utilities Commissioners, for which I am appearing. It is my understanding that the States of Kansas, Oklahoma, and Texas are the only States which have granted jurisdiction to regulate the production of petroleum to their railroad or utilities commissions.

The commissions of those three States, however, during the inevitable period of experimentation and litigation, were pioneers in developing the principles which should be applied to the regulation of petroleum production.

By decisions won in bitterly contested litigation before the courts, they have established the right of the people, through their governments, in the exercise of the police power, to regulate production for the purpose of preventing waste and other public injuries.

The statutes of those States have been perfected so that they have become the models for the conservation laws of other States, and models for much that is in this proposed Federal law. I submit that those commissions, and the conservation officials of other States, faced with a task of tremendous difficulty, have done commendable work, not work to be condemned and struck down by the Congress of the United States.

Judge Ernest O. Thompson of the Texas Commission is chairman of the Interstate Oil Compact Commission, representing the States of Colorado, Illinois, Kansas, Michigan, New Mexico, Oklahoma, and Texas, and operating under an interstate compact, sanctioned by Congress, and designed to enable the contracting States to correlate their regulatory activities. Information concerning the work of that organization under his direction I understand is already in the record.

Representatives of these regulatory commissions have been before you. They are men of high type, as you know. Judge Homer Hoch, who served several years as chairman of the Kansas Commission, before he took the seat he now holds upon the supreme court of his State, served long in Congress, and on this committee. The present chairman of the Kansas Commission, an able lawyer, has been before you. Judge Bond, an eminent jurist before he left the bench to become chairman of the Oklahoma commission, has likewise been before you.

Judge Thompson, I understand, will also come before you before this hearing closes, if his health permits. His reputation as a student of the problems involved in oil conservation is well known, and was recognized in his selection as chairman of the Interstate Oil Compact Commission.

Hon. A. S. J. Shaw, of the Oklahoma Commission, whose action, together with that of Chairman Lon Smith of the Texas Commission, brought before our executive committee the resolution which I have today presented, has instructed me to state here the following as some of the reasons for the protest of his commission against the enactment of this bill:

1. The Cole bill places in the hands of a commissioner, appointed by the President and under the direction of the Secretary of the Interior, the power to absolutely control the production of oil, thereby taking from the States all authority to conserve their natural resources, which is one of the fundamental principles of American Government.

2. Oklahoma has been conserving oil since 1915, and even before. At that time, however, we passed a comprehensive conservation statute, and since 1917 we have maintained a conservation department under the direction of the corporation commission. We think that this places us in better position to conserve our natural resources than any Governmental agency could be.

3. Oklahoma has effectively enforced ints laws, and when a State government is reasonably performing its obligations the Federal Government should certainly not interfere.

4. Through years of experience Oklahoma now has the confidence and cooperation of the industry. Practically every oil operator, large and small, is assisting the Oklahoma conservation officers in the performance of their duty. Such cooperation would take years to develop under a Federal system.

5. The Oklahoma conservation laws have been construed many times by both State and Federal courts, and the principles and procedure are now well established and understood. A new law such as the Cole bill could cause endless confusion before principles and procedure are established.

6. The Cole bill proposed a long-range operation. The commissioner could hold many if not all of his hearings in Washington. Relief to the operator is in the Federal courts only, which would cause great expense and much delay. It would be necessary often for the small individual operator to go to Washington on hearings on some minor alleged violations. The Oklahoma Corporation Commission can and does grant relief speedily, and it is so located that it is little trouble for the operators to ask for and receive relief.

Mr. Chairman, those State commissions represented in our association which exercise no jurisdiction to regulate petroleum production elected to join with the commissions of Kansas, Oklahoma, and Texas in protesting against the enactment of this bill, because of the principle involved.

They believe that there is, and will continue to be, a growing tendency to concentrate governmental activities in Washington, under the Federal control. They believe that if Congress does not resist that tendency, but on the contrary resorts to pretexts, and to artful draftsmanship of statutes, for the extension of Federal activity into fields which were reserved to the States under our Constitution, as it was framed by the fathers, our dual government will be broken down.

For that reason the State commissions believe that every State commission and every local agency of government should join in asking you to demonstrate by your action on this bill that you intend to act as the guardian of the right of all the people to control their local affairs locally.

The following letter from Mr. Ernest R. Downie, of the State Farm Insurance Cos., Bloomington, Ill., with offices at 212 Orpheum Building, Wichita, Kans., is filed herewith:

STATE FARM INSURANCE COS.,
Wichita, Kans., March 5, 1940.

Hon. WILLIAM P. COLE, Jr.,
House Office Building, Washington, D. C.

DEAR MR. COLE: I feel I should apologize for the enclosed statement. I had so little time to give to it that it is merely thrown together.

But if you will overlook the typographical errors and the mistakes in construction and grammer, perhaps it will serve to convey my ideas on this subject.

There is a lot of objection here to Federal control of anything because people have been scared by the propaganda about "dictatorship." But yet I am sure a large percent of our farmer-landowners would endorse what I have written herein. I am very hopeful that something will be done because as things are going, our Kansas oil business will soon be a thing of the past.

Thanking you, I am,
Sincerely,

ERNEST R. DOWNIE.

WICHITA, KANS., *March 5, 1940.*

Mr. WILLIAM P. COLE, Jr.,
Chairman, Special Subcommittee on Petroleum Investigation,
Washington, D. C.

DEAR MR. COLE: Inasmuch as nearly all discussion of this bill (H. R. 7372) and of the oil business seems to center around the interests of the commercial producers and refiners, I wish to make some observations in behalf of the farmer who owns oil- or gas-producing land, and the conservation of our Nation's oil supply.

NO CONTROL OF PRODUCTION

In the matter of adjusting production to market outlet we have done nothing except try to control the flow to market of oil from wells already in production. As far back as 1934 it was evident our drilling operations should be restricted. Average wells in central Kansas fields were then allowed to produce about 10 percent of their potential flow and new wells by the dozens were being brought in every month. And other new fields were being explored and brought into production. Everywhere drilling was being carried on at top speed. Until now our good wells are shut in most of the time and the return to our landowners is so small it is negligible. Drilling of additional wells could have been controlled and apportioned in a way that would have been fair to everyone and would also have been greatly in the interest of the landowner and of conservation. And obviously the only effective sensible method of adjusting supply to demand is to restrict the drilling of new wells.

SO-CALLED CONTROL WASTEFUL

Unrestricted drilling and the shutting down of the wells after being brought in, is not only ridiculous as a means of controlling flow to market, but is also a very wasteful procedure. In central Kansas fields there is always the menace of water encroachment in wells that are shut down most of the time, and especially since most wells drilled in the past 6 years have been treated with acid to boost the initial potential. In the lime formations we have in most of our fields, this acidizing greatly increases the inflow of water. Shutting such wells in, except for a few days each month, usually results in their going mostly to water in a year or two. Thus the landowner loses the income that should be his and our country loses a valuable well.

ACIDIZING A PERNICIOUS PRACTICE

The oil fraternity will vigorously object to my statements under this subject but I am none the less sure that I am right. And I believe that an impartial investigation by a fair-minded committee of citizens will bear out my contention. The abnormal increasing of the flow of a new well cannot possibly be anything but a detriment to the landowner, especially under present conditions as to market outlet. But it is part of a new method of operation adopted by many oil-producing companies in the past 10 years. It is a well-known fact in this territory that the ambition of most oil-producing companies, when they move into a new field, is to harvest the flush production as quickly as possible and by any means whatever and then move on to other fields, with no regard to whether the methods used will get the utmost total production and conserve our future supply. It is only natural that commercial oil interests should prefer this plan of operation. Landowners whose interests are thus vitally affected do not object because they are anxious to get as much return as possible as soon as their wells are brought in, and because they do not understand oil-production methods. Any by the time they get some education from their experience, their wells have been ruined and the drilling company has moved on to new fields. Also under standard lease terms in Kansas, the landowner has no voice in matters pertaining to the handling of his wells, and being unorganized they cannot make an effective protest to any constituted authority.

The matters mentioned above could properly come under State supervision, but so far have not, in Kansas. There are other factors in the situation that cannot possibly come under the jurisdiction of any one State.

ILLINOIS TAKING OUR MARKET

Since the allowable production in Kansas is now down so low that it is difficult for drillers to get their money back, in any reasonable time, for drilling a new well. these drilling companies have transferred their operations to Illinois and are busily engaged in producting a lot more oil than that State has right to put on the market. We were already in trouble here with enormous potential and very little market outlet and now they are literally flooding the market with the full production from all the wells they can drill. There is no need to explain what that is doing to our Kansas market for petroleum. Neither these producing companies nor the landowners in Illinois are concerned about the possible outlet for Kansas crude. According to reports these producing and drilling companies are exploiting the Illinois oil fields just as they did in Kansas. So far as the attempted proration between Oklahoma, Texas, and Kansas is concerned, the other two States have always taken advantage of Kansas. Kansas has no control and no right to control over oil production in other States and these States could easily oversupply the market without any oil from Kansas. How can we hope to bring order and fair play out of this chaos without some agency with authority to apportion fair market quotas to the different States and require compliance with such quotas. And what agency can properly be given such authority except our Federal Government?

It is not that I prefer Federal control to any other control of our oil business, but I prefer it to no control.

The above is not intended as an indictment of any oil company or any group of oil companies, it is merely a statement of facts and opinion by one who has had experience as an owner of land in a central Kansas oil field. But no constructive discussion of this matter can be had without facing the fact that the operations of producing companies are distinctly selfish and not in the interest of landowners or the conservation of our oil supply.

Repsectfully submitted.

ERNEST R. DOWNIE.

(At the request of Mr. F. Emerson Hoar, consulting engineer, 1328 Forty-fifth Avenue, San Francisco, Calif., the following letter is filed herewith:)

SAN FRANCISCO, *January 26, 1940.*

Subject: No. 4011–25A.

Hon. WILLIAM P. COLE,
Member of Congress, Washington, D. C.

MY DEAR MR. COLE: I have followed with interest the investigation which your committee has been conducting and I am encouraged to hope that this work and your sponsorship of important petroleum conservation measures before Congress will yet show real results.

As one of the most persistent—and least garrulous—of California's proponents of true conservation and one who has given more than 25 years analytical study to the ever-changing oil and gas problem, I can lend a sympathetic ear to any frank discussion of the facts. As a result of particular studies which I have undertaken for the State, the Federal Government, for private interests and for personal satisfaction, I have often given voice to conclusions similar to those attributed to you concerning the Nation's oil resources.

The work of your committee, even if it results in a small degree of effective Government control, can mean much to the defensive economy of the Nation and to the normal well-being of the people. In this connection it should be apparent that the average citizen is beginning to have definite opinions concerning the necessity of protecting the Nation's wealth in natural resources and is becoming conscious of the fact that a shameful record of unbridled waste has been left by the oil industry throughout its entire history.

I agree that public control as presently practiced has fallen far short of results which can be considered satisfactory. To date it has had little significance except possibly to indicate the inevitable public awakening which will surely come. I also have found that voluntary curtailment of production—of common-sense cooperation and decent coordination—is not working. I will go even further: It never has worked and it never will work. Too, I note that public declarations mean nothing and the so-called gentleman's agreements are about as sacred as international treaties. While we recognize these things, however, let us not judge the individual participants in the orgy of production too harshly. If we as a people permit such a state of affairs to exist we must share the responsibility for for the results with those who have taken advantage of our neglect and indifference.

The voluntary exercise of self-restraint by private business undertakings an individuals, when it calls for the foregoing of immediately available profits and the renouncing of substantial business advantages, is too much to expect in this commercial age. Where restraint is necessary or desirable—and certainly it is a crying need in connection with the exploitation of our oil and gas resources—it can only be secured by the imposition of strict and intelligent public control. And since petroleum and its products are matters of national concern, and because local and State control has consistently bogged down under a maze of conflicting interests, inappropriate theory, and indifferent practice, only Federal control can bring order out of chaos. Rare exceptions, if there be any, only serve to prove the truth of this statement and, if examples are necessary, they are as multitudinous as they are convincing.

Private corporations are essentially conscienceless and unmoral things and, when individuals by chance or choice find themselves in serious competition with corporate interests they oftentimes adopt a corporate attitude in their manner of thinking and acting. Call it an expression of the instinct of self-preservation or recognize it as simple ruthless selfishness, the results are the same and will always be so so long as human nature remains what it is.

It is of course apparent that most, if not all, of the so-called State conservation laws are little more than loosely drawn declaratory measures which afford, deliberately or otherwise, ample opportunity for successful evasion of their restrictive provisions. However, few of us are unkind enough to condemn the sincere proponents of any of these psuedo-conservation statutes or unappreciative enough to overlook the consummate skill and accurate knowledge of others as evidenced by artistically castrated enactments which apparently did serve to placate the concurrent public opinion.

One fatal defect in the theory of State control of a national necessity such as petroleum is found in the fact that there has been no agreement, as between the several oil-producing States, upon the fundamental factors involved. They are not of one mind with respect to conservation as a policy, and they have never been in agreement on questions of regulatory theory and practice. What is more important, however, is the fact that coordination of policy and effective functional cooperation as between the States will never be attained, if for no other reason than that their respective resources in oil and gas has a different relation to the larger problem of State economy and State politics. Without such uniform policy and coordinated practice there never will be effective State control over the complex and widely distributed petroleum industry and without adequate control and widely distributed petroleum industry and without adequate control of production chaos will continue to hold sway over what is, perhaps, the Nation's most valuable exhaustible resource.

One other fundamental error which has contributed to the glaring incompetence of State regulatory control should be mentioned: T is is the common failure to recognize that gas is only functionally useful in connection with the production of petroleum; its value is this respect does not attach to the corpus of the gas nor to its worth as a complemental and competitive fuel of great utility. However, State regulatory practice persists in its attempts to disassociate the gas from its petroleum and blandly proceeds to consider them as separate and unrelated products, supported by anemic theory and pompous practice. Gas is considered as mere gas regardless of whether it comes from dry gas areas or is associated with petroleum.

It is, of course, an obvious fact that the functional attributes of the gas in situ determines the amount of recoverable petroleum which exists in any productive deep well area. It is the agency by means of which the petroleum is brought to the surface and when once the deep field pressure is exhausted the oil production in that area ceases regardless of what quantities may yet remain in the formation. In this connection it should be pointed out and shouted from the housetops that the shameful waste of pressure in our deep oil fields, through lack of proper coordination between the production of oil and gas or otherwise, presents a more direct and more serious challenge to national well-being and security than can the unnecessary and improvident production of the petroleum itself.

Apparently, you and the members of your committee have been impressed by the situation which you found in the Kettleman Hills and Coalinga districts in California. Perhaps you also made note of the fact that about half of the Kettleman area is owned in fee by one of the major producing companies and that almost the other half is owned by the United States Government which has leased the mineral rights mainly to the larger operators. When Kenda (Kettleman North Dome Association) was formed in 1931 to secure unified and economical development of the field, Kenda membership was, and still is, composed of the lessees of Government land plus a few operators of small fee-owned parcels in the area. The owner of the other half of the field declined to become a member of the association but undertook a gentleman's agreement to cooperate. But, my dear Mr. Cole, corporations, whether they act singly or are grouped under a pseudonym, are never gentlemen. You already know what happened and is even now happening in the Kettleman field and, true to form, history repeats itself. Coalinga is repeating the history of Kettleman.

And what are you going to do about it?

Finally, none of us should lose sight of the fact that the petroleum industry of the oil-producing States is preponderantly supported by the populations and industries of nonproducing areas and by national and international commerce. It is to the national economy and to the national security that the petroleum resources of the Nation must be and remain dedicated.

I wish you and your colleagues luck—you will need it. If you can bring about an effective control you will not only have the approbation of millions of thinking Americans but you will also be doing a service to the petroleum industry in saving it from itself.

If I can be of service, please do not hesitate to call on me.

Yours very truly,

F. EMERSON HOAR,
Consulting Engineer.

(Representative Dempsey, of New Mexico, who is consistently interested in petroleum legislation, found it impossible to appear before the committee in person, but has presented a statement which I am glad to file at this point:)

HOUSE OF REPRESENTATIVES,
Washington, D. C., March 1, 1940.

Hon. WM. P. COLE,
Chairman, Subcommittee on Petroleum Resources,
Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: I am enclosing herewith statement which you so kindly consented to include in the record of the hearings by your committee on H. R. 7372.

Thanking you for your courtesy, I am,

Sincerely yours,

JOHN J. DEMPSEY.

STATEMENT BY REPRESENTATIVE JOHN J. DEMPSEY OF NEW MEXICO, IN OPPOSITION TO H. R. 7372—A BILL TO PROMOTE THE CONSERVATION OF PETROLEUM, ETC., FOR THE RECORD OF THE SUBCOMMITTEE OF THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE, CONDUCTING HEARINGS ON THIS MEASURE

Mr. Chairman and members of the committee: In view of the statements made before your committee by the Honorable John E. Miles, Governor of New Mexico, and the Honorable Hiram Dow, member of the Interstate Oil Compact Commission, representing the State of New Mexico, I do not deem it necessary for me to enter into a detailed consideration of the existing conditions in regard to proper conservation and management of the petroleum resources in that State. New Mexico is a signatory to the Interstate Oil Compact, which is accomplishing, it seems to me, virtually all of the vital purposes contemplated by H. R. 7372.

In view of the virtually unanimous protest against this legislation which has been offered before your committee by the chief executives and other representatives of the various oil and gas producing States, it appears to me that the Congress of the United States would be thwarting the will of the people by the passage of this bill. Most certainly it is not within the province of the Congress to impose on the various States regulation of the resources of those States, entirely against the almost universal opposition of the duly constituted authorities in those States. The title of the bill sets forth that it is a measure "To provide for cooperation with the States in preventing the waste of petroleum." I do not question the motive which prompts the proponents of this measure to offer it, but I do seriously question, in view of the evidence that has been offered before your committee by those who are well qualified as experts, the need for, or the desirability of the legislation.

The records of the various State commissions of those Commonwealths which are members of the Interstate Oil Compact, without exception, prove conclusively that at this time there exists the most satisfactory condition this country ever has known with regard to the careful conservation of petroleum resources, the proper prevention of waste, and an orderly conduct in production and marketing.

To impose upon these States, which are conscientiously conserving these petroleum resources, any further Federal control than now exists would be a distinct invasion of the rights of those sovereign States.

As a representative of the State of New Mexico, I deem it my duty to bring to your attention the fact that public sentiment in that State is virtually unanimous against this legislation. There has been close and most satisfactory cooperation between the State of New Mexico and the Department of the Interior, with regard to proper conservation of petroleum resources in the development of those resources on the public lands of both the Federal Government and the State. Recently a law was passed by the Congress, authorizing the Secretary of the Interior and the Commissioner of Public Lands of New Mexico, to enter into joint oil and gas leasing agreements on the public lands in the State. This is truly a voluntary cooperative program, and it applies equally to all other public lands in oil-producing States.

In fact, if this legislation were to become law, the one mitigating feature would be that administration of the law would be under jurisdiction of the Department of the Interior, which, of all of the Government agencies, would be the most satisfactory to the various States, I am sure, because of the sound and constructive policies of the present Secretary.

There is a serious question in my mind whether this proposed legislation will stand the test of the courts, unless there is included in it a provision that it shall become effective only after its approval by the duly constituted executive and legislative authorities in the various States, themselves. In view of the evidence and statements before your committee, it is clearly evident that no such permissive agreement would be made by any of the States and it, therefore, would be highly improper to attempt to impose upon those States, through Federal legislation alone a condition which is so highly and universally unacceptable to them.

I desire to point out futher in this connection that there exists at this time a condition of cooperation between the Federal Government and the States, insofar as proration of petroleum production is concerned. This, in my opinion, is the only proper way to approach the situation, permitting the States voluntarily to enter into cooperative agreement, because, in the final analysis, the marketing and production of petroleum will determine solely the degree of conservation which can and will be accomplished, regardless of the authority established.

It is entirely reasonable to assume that each State will be more zealous in the conservation and safeguarding of its own resources, where it is voluntarily a member of an interstate body dedicated to that purpose, than it would be under a regulatory authority which it resents and with which it is not in accord.

Most certainly the time has arrived when further encroachment on the rights of the individual States should be seriously considered. I join with the Governor of New Mexico and those other representatives of the State which have appeared before your subcommittee, in protesting against the measure.

(At the request of Mr. Robert W. Hadlick, executive secretary of the Missouri Independent Oil Jobbers Association, 101 East High Street, Jefferson City, Mo., Mr. Hadlick's letter dated March 7, 1940, together with copy of resolution adopted by their association, is filed herewith:)

MISSOURI INDEPENDENT OIL JOBBERS ASSOCIATION,
Jefferson City, Mo., March 7, 1940.

Hon. WM. P. COLE, Jr.,
Chairman, Petroleum Subcommittee,
House Committee on Interstate and Foreign Commerce,
Washington, D. C.

DEAR SIR: We are transmitting herewith copy of a resolution adopted at our annual convention in connection with H. R. 7372, and would appreciate very much if you would make this a part of the record.

Appreciating your cooperation, we are,

Sincerely,

MISSOURI INDEPENDENT OIL JOBBERS ASSOCIATION,
BY ROBERT W. HADLICK, *Executive Secretary.*

Whereas there is pending before the Congress of the United States, H. R. 7372, proposing additional control over the oil industry by the Federal Government; and

Whereas it is the opinion of this association that rather than extend Federal control, such acts as already control the industry should be repealed; and

Whereas Federal interference with the production of oil has been to the detriment of the independent oil marketers and the great mass of consumers: Now, therefore, be it

Resolved by the Missouri Independent Oil Jobbers Association in convention assembled at Excelsior Springs, Mo., this 22d day of February 1940, That we respectfully oppose the enactment of H. R. 7372 and call upon the Missouri Representatives and Senators to oppose same; and be it further

Resolved, That a copy of this resolution be mailed to the chairman of the House Committee on Interstate and Foreign Commerce and to the Representatives and Senators from the State of Missouri.

Mr. COLE. The largest oil-producing section of our country is east Texas, located almost entirely within one congressional district. The problems of that district are primarily those of the petroleum industry and are a matter of constant concern to the young, new, and efficient Representative, Mr. Beckworth.

The committee is delighted to receive a statement from him on this subject, which I insert in the hearings at this point.

STATEMENT OF REPRESENTATIVE LINDLEY BECKWORTH, OF TEXAS

As a Member of Congress who represents the district embracing the great East Texas oil filed, the largest oil field in the United States and world, I am, and the people who earn their incomes directly or indirectly from the oil industry are, vitally concerned with any legislation dealing with oil.

I have had occasion to observe the transition which has come to pass in connection with the East Texas oil field. As in many fields which have just been discovered, every phase of production and processing is not carried on in the most orderly way. But ultimately the flames of furious scramble simmer down to orderly normality. Production and refinery processes are now carried on for the most part in orderly fashions in east Texas.

Naturally I have been very interested in the studies conducted by the Cole committee not only during the past few months but also in those conducted in 1934. I believe it well to obtain facts relating to the oil industry and to have these facts available, up to date, to as accurate a degree as possible. Indeed, I believe the factual information will always prove to be advantageous to all concerned. May I commend you members of the committee who have striven many days to obtain these facts.

The matter of controlling the oil industry is one which I believe to be an inherent right of the States, and in my opinion the States have thus far been successful in the main in managing to a rather successful degree this most important industry. No person can contend the States have been mistakeless; on the other hand, the United States Government has not been without error in the various realms where it has had power and exercised that power.

It occurs to me the Cole bill would absolutely divest the States of all authority to control the oil industry. I know it is contended the proposition of control would be a mutual one, but the bill clearly provides, as I interpret its provisions, that as between a Federal ruling and a State ruling, the Federal ruling would definitely prevail. To center all power in Washington would be in my opinion impractical, ultimately unsuccessful, and opposed to the welfare and advantage of small independent operators. I am opposed to divesting the States of their power to control the oil industry and transferring that power of control in toto to one man or one Bureau or Department here in Washington.

(At the request of our colleague, Congressman John M. Houston, of Kansas, filed herewith is the following letter:)

STATE FARM INSURANCE COS.,
Wichita, Kans., February 27, 1940.

HON. JOHN M. HOUSTON,
Member of Congress,
House Office Building, Washington, D. C.

DEAR MR. HOUSTON: The Wichita Beacon of Sunday, February 25, quotes you in some comment on the Cole bill. And your remarks regarding the Kansas situation are to me so astonishing that I cannot refrain from writing you. You seem to be under the impression, Mr. Houston, that Kansas has made a real success of handling its oil business and I certainly must disagree with you.

Of course it depends somewhat upon whose best interests you are discussing, the oil-producing companies or the landowners. So far as the landowners are concerned, the oil business has been about as badly mishandled as it could be. Allow me to call attention to only one or two items.

It was clearly evident in 1934 that our oil production was so large and was increasing so rapidly that within a short time our allowable would be down to nothing. It was only 10 percent then and wells were being drilled as rapidly as possible all over central Kansas. Drilling should have been restricted before then and certainly not later than that year. At that time I advocated restricting drilling to one well on each quarter section. My idea being it was better for the land owner to have one well and have it produce than to have 5 or 10 and have them shut down most of the time and finally ruined within a year or two.

But the drilling and producing companies were not in favor of that and apparently no one else in authority was interested. The drilling companies could still make more money by drilling a lot of wells than by drilling only a few. So drilling continued to run wild without any semblance of control until now our potential production is so large and our allowable so small that wells are shut down most of the time. The return to the landowner is so small it is negligible and even a drilling company can't get its money back for drilling a well, in less than 5 or 10 years.

Besides this foolish overdrilling of our fields, practically all wells drilled within the past 6 years have been acidized. This treatment boosts the already too large production still higher but it is done by the drilling companies in an effort to get a larger amount of money out within a shorter time. In addition to other evils attending this practice of acidizing, one of its worst features is that in the lime formations we have around here, it lets the water in so badly that wells are soon ruined. They usually have a maximum production for not more than 1 month and run down so rapidly after that that they are almost worthless at the end of a year.

This is nothing less than criminal waste and ruthless exploitation of one of the country's most valuable resources and at the same time the landowners are robbed of a return they are entitled to receive. The drilling companies will contend that just as much oil is recovered by their methods, the only difference being that it is recovered in a shorter time, but that is absolutely untrue. Thousands of wells drilled in recent years that are now ruined, would have been profitable wells for many years to come if they had been properly handled. And yet as a Nation we pretend to be greatly concerned about conserving our oil supply.

But since our oil business has reached this sad state, our major and independent drilling companies have simply moved on to greener pastures, and have started in Illinois one of the biggest drilling campaigns the Middle West has ever seen. As there is no control of production in that State, they are flooding the country with oil and rapidly cutting off what little market outlet Kansas has left. After being mainly instrumental in ruining our Kansas oil business they are now proceeding to complete our destruction.

Furthermore they are wasting and exploiting the Illinois oil supply just as they did in Kansas. The landowners in Illinois will not object any more than they did in Kansas and for the same reasons. In the first place most of them need the money so badly they are glad to get any extra income even though it is only a fraction of what they are entitled to, and in the second place, they don't understand the oil-production business and by the time they get acquainted with it their wells will have been ruined and the drillers will be moving on to new fields. And in any case the landowner has no voice whatever in what the drilling company does to his oil land.

Now, Mr. Houston, I have merely touched on this situation but with these things in mind I think you will understand why I am amazed at your statements No doubt there are some valid objections to Federal control, but what would you suggest that we do, if not that. We have no control now and obviously Kansas can never expect to exercise any control over production in other States, if it could within our own boundaries. Oklahoma and Texas have always taken advantage of Kansas on the proration arrangements and now with the immense new production in Illinois that is entirely uncontrolled, how can we hope to have any market until some agency has the right to require them to respect our market rights. No State can hope to get anywhere in this business, I mean if we consider the rights of the landowners, even if it could properly handle its own oil affairs because the other States can flood the market and shut the one State out completely. How else can this be handled except through a Federal agency?

As to my qualification to speak on this subject and my interest in it, I happen to be the owner of some Kansas land that has some oil wells on it, so I have a very real interest in this matter, besides some first-hand experience.

I notice that our Governor Ratner went to Washington and worked against the Cole bill but don't let that mislead you. I don't know what Mr. Ratner had in mind and I would not impugn his motives but he surely is on the wrong track and at least a large percent of us who own Kansas oil land are not in accord with his ideas.

I am very much in favor of Federal control of our oil production because I can see no other way. If it doesn't work very well it certainly can't be any worse than the situation we have now. Thanking you for your careful consideration of this matter, I am,

Very truly yours,

ERNEST R. DOWNIE.

(Filed herewith is letter from Mr. G. W. Holland, director, Petroleum Conservation Division, Department of the Interior, together with table issued by the Bureau of Mines covering "Receipts of domestic crude oil by States—thousands of barrels" for January 1940:)

Department of the Interior,
Petroleum Conservation Division,
Washington, March 20, 1940.

Hon. William P. Cole, Jr.,
House of Representatives.

My Dear Mr. Cole: I am sending you herewith a copy of a table issued by the Bureau of Mines covering "Receipts of domestic crude oil by States—thousands of barrels" for January 1940. This is table 2 in the Bureau of Mines Report No. A–943–76.

This table is of particular interest in that it reports, for the first time, shipments of Illinois crude oil to other States. It will be noted that 6,134,000 barrels, a daily average of 198,000 barrels, of Illinois crude oil were received during January 1940, by refineries in Indiana, Kentucky, Michigan, Missouri, New Jersey, New York, Ohio, Pennsylvania, and West Virginia.

Reference was made to such shipments in the hearings on H. R. 7372 before your committee and it is for this reason particularly that I thought you might be interested in having this table.

Sincerely yours,

G. W. Holland, *Director.*

Daily average receipts of domestic crude at refineries in January were 3,361,000 barrels, or 18,000 barrels more than in December. Daily average receipts from intrastate sources increased 79,000 barrels, but those from interstate sources decreased 61,000 barrels. In interstate deliveries, New Mexico and Oklahoma showed the largest decreases. The interstate movement of Illinois crude reported separately for the first time) was 198,000 barrels daily in January.

Table 2.—*Receipts of domestic crude oil by States*

[Thousands of barrels]

	Total domestic receipts	Intrastate receipts	Interstate receipts							
			Illinois	Kansas	Louisiana	New Mexico	Oklahoma	Texas	Other	Total
Arkansas	925	925								
California [1]	17,085	17,037							48	48
Colorado	245	168							77	77
Georgia [2]										
Illinois [3]	5,144	3,818		246	21	242	553	218	46	1,326
Indiana	5,940		1,592	1,304		19	2,671	354		3,940
Kansas	3,844	3,033					808	3		811
Kentucky [4]	802	334	305						163	468
Louisiana [5]	4,779	2,812						1,049	918	1,967
Maryland	835				224	43		568		835
Massachusetts [6]	1,423							1,423		1,423
Michigan	2,119	1,707	412							412
Missouri	676		23	28			57	6	562	676
Montana	654	498							156	156
New Jersey	5,821		387		580	658	662	3,210	324	5,821
New Mexico	178	138						40		40
New York:										
East	581							581		581
West	896	340	478						78	556
Ohio:										
East	1,177	127	1,037				13			1,050
West	3,294	30	1,834				1,100		330	3,264
Oklahoma	4,652	4,234		359				59		418
Pennsylvania:										
East	6,676				527	75	718	5,356		6,676
West	1,700	1,340	5				199		156	360
Texas	33,318	27,183			2,933	2,008	984		210	6,135
Utah	232								232	232
West Virginia	293	185	61				15		32	108
Wyoming [7]	920	893							27	27
United States total	104,209	64,802	6,134	1,937	4,285	3,045	7,780	12,867	3,359	39,407
Daily average	3,361	2,090	198	63	138	98	251	415	108	1,271

[1] Includes Washington.
[2] Includes Delaware, South Carolina, and Virginia.
[3] Includes Minnesota.
[4] Includes Tennessee.
[5] Includes Alabama.
[6] Includes Rhode Island.
[7] Includes Idaho, Nebraska, and South Dakota.

(The following letter from W. H. Kennon, attorney at law, San Antonio, Tex., together with a statement respecting the status of the royalty ownership of petroleum interests, is filed herewith:)

San Antonio, Tex., *March 16, 1940.*

Hon. William P. Cole, Jr.,
Washington, D. C.

My Dear Sir: I take the liberty of enclosing herewith, as of possible interest, observations respecting the status of the royalty ownership of petroleum interests. In some very material respects the royalty owner is indeed the forgotten man of the oil and gas industries, upon the assumption, mistaken I believe, that his interest and that of the operator are identical to the extent that the latter may be depended upon for protection. In any event, while the entire subject matter is being given such intensive consideration additional attention to the actual and practical status of royalty ownership, as a separate and independent class, would seem to be fully justified.

Very truly yours,

W. H. Kennon.

Royalties

There is a wide divergence of viewpoint respecting the need for close Federal supervision of the oil and gas industries.

Proponents of such control predicate their contentions largely upon the following considerations:

(1) Favorable effect upon the national economy of uniform application of sound conservation practices in the production, transportation, refining and distribution of these products, in the interest both of price stabilization and maximum ultimate recovery.

(2) Constantly increasing dependence upon instrumentalities of interstate commerce and other agencies of the Federal Government by the many closely interrelated units of these enterprises.

(3) The conceded fact that, for the most part, they are inherently monopolistic and have in some jurisdictions been so declared by statute.

(4) That their respective intra and interstate activities mesh so closely as to defy practical separate or group regulation by the States.

(5) That congressional enactments, whereby a given act may be innocent in one Federal district and become an offense in another, dependent upon the character and quality of State enactments, amounts to an unjustifiable abdication of Federal sovereignty in the premises and results in confusion and lack of uniformity in the administration of its criminal statutes.

Opponents of Federal control base their opposition mainly upon the propositions:

(*a*) As applied to production practices, it would be an unconstitutional invasion of States' rights, in that production and manufacture are essentially synonomous and the former is therefore purely an intrastate activity;

(*b*) That the States, respectively, have a more intimate knowledge of the many intricate technical and legal problems concerned with drilling and production practices and each is, therefore, in better position to solve such problems justly and expeditiously; and

(*c*) By virtue of existing Federal statutes and judicial precedent in relation to interstate commerce, the Federal Government is already possessed of adequate regulatory powers.

These and kindred questions are presently being considered at congressional hearings upon the so-called Cole bill, during which the entire subject matter will no doubt be fully developed.

It is, therefore, not the purpose of this paper to attempt further elucidation of the many intricate questions involved, but rather to call attention to another phase of the general subject matter which apparently has received little attention.

And that is, the situation of the royalty owner.

To convey some idea of the magnitude of this interest, the following statistics for the year 1938 may be of interest:

(1) 1,210,000,000 barrels of oil were produced, the share of the royalty owner therein being approximately 150,000,000 barrels;

(2) 2,524,700,000,000 cubic feet of natural gas were produced, the share of the royalty owner being approximately 315,000,000,000 cubic feet, or, stated in terms of B. t. u. value (6,000 cubic feet of gas being considered the equiavlent of a barrel of fuel oil), an additional 50,000,000 barrels of the latter;

(3) 2,062,000,000 gallons of natural gasoline were produced, the share of the royalty owner being approximately 250,000,000 gallons; and

(4) Expanding royalty values incident to recycling operations. The attendant increase and complication of technical and legal problems involved.

The interest of the royalty owner (the landowner's share) is ordinarily one-eighth, or 12½ percent of the gross production, deliverable without deduction for development or operating costs, and has come to be dealt with all over the United States, oftentimes in very small fractions, down to as low as five-thousandths or less.

Under ordinary conditions, both the operator (the owner of the seven-eighths working interest) and the purchaser (frequently identical in substantial interest with the operator), are in position to protect themselves respecting the constantly recurring legal and technical problems which affect the price to be obtained for the product and the accuracy of its measurement. In fact, there are often substantial extraneous considerations moving to the operator for acquiescence in a given course by the purchaser in which the royalty owner does not share but as a result of which his interests may be adversely affected, so that, when these industries are viewed as entireties, the interests of the operator and the royalty owner are by no means identical in practice although this is the theory upon which the majority of State conservation statutes have been administered.

It has come to be generally recognized, therefore, that the royalty owner, as a class, is without centralized or otherwise effective representation of his interest in these tremendous industries. As a general rule of thumb, the royalty is considered to be approximately the equivalent in value of the working interest, the former constituting an interest in the gross, whereas the latter is merely a net interest, after deduction of all costs incident to acquisition, development and operation.

But, notwithstanding the almost immeasurable aggregate value of his stake, the royalty owner, as such, has no practical means for making his influence felt. The buyer measures his part of the product and largely determines the price to be paid for it. If this determination should prove to be altogether arbitrary or whimsical, the individual royalty owner is without effective remedy.

If the operator and the buyer always dealt at arm's length, or even customarily so, the situation would be altogether different in this respect. But such is not the case. In most instances, the degree of real competitive interest as between the operator and the buyer is determined by the extent of integrated ownership. If, for all practical purposes, the operator and the buyer are one in point of interest, it follows that the royalty owner is without justification in relying for protection upon the operator because in the latter case it is to the interest of both operator and buyer that the transaction of sale and purchase be consummated at the lowest possible price and under conditions most favorable to the buyer.

There is a growing conviction that in such circumstances the only recourse of the royalty owner, as a class, is the Federal Government, and that a positive duty rests upon it in the premises to take such action as will impart that degree of price and administrative stability, as affecting royalties, which otherwise would be unattainable even assuming ultimate close governmental supervision of the administrative practices of these industries.

The most practical method for accomplishing this result would seem to be some plan whereby some governmental agency would be authorized to acquire very small royalty interests, so strategically located, regionally and specifically, as to make its influence felt, as a royalty owner, in the development of proper practices in relation not only to conservation but to stabilization of prices, accurate measurements and other factors bearing upon present and ultimate values; all upon the theory that it might be one thing to ignore or treat arbitrarily the rights of hundreds of thousands of individuals and quite another to take unconsidered or arbitrary action directly affecting Government-owned property.

No doubt this added element of protection would be welcomed by royalty owners as a class, and it should not be unduly difficult, therefore, to devise a practical means for the acquisition of such interests without any direct drain upon the Federal Treasury.

W. H. KENNON.

SAN ANTONIO, TEX., *March 1, 1940.*

(At the request of Mr. Benjamin C. Marsh, executive secretary of the People's Lobby, 307–308 Maryland Building, Washington, D. C., the following statement is filed herewith:)

BRIEF AGAINST H. R. 7372 "A BILL TO PROMOTE THE CONSERVATION OF PETROLEUM," ETC., BY THE PEOPLE'S LOBBY, INC., WASHINGTON, D. C.

Collier's editorial for January 6 this year, stated: "We seem to be on our way to some kind of social system, which our forefathers couldn't have named and wouldn't have approved; some system under which, whether we like it or not, government will muscle into all our lives a lot more intimately than it ever did before."

CONSERVATION MUST BE FOR CONSUMERS

Our opposition to H. R. 7372 is based, not upon opposition to conservation of all natural resources, but to basic reasons.

1. This bill seeks to conserve the people's oil resources for the benefit of the owners, big and little, and they can't be regulated.

2. The four competing energy producing natural resources—coal, oil, waterpower and gas—must be coordinated and operated as a unit.

This cannot be done under private ownership.

3. Basic natural resources belong to the people, and all regulatory measures such as the Guffey Coal Act, the Connally Hot Oil Act, and this bill, postpone the assertion by Congress of that public ownership, and the development and utilization of these resources for the benefit of the people.

4. Costs of raw materials must be reduced.

1. *This bill seeks to conserve the people's oil resources for the benefit of the owners, big and little, and they can't be regulated.*—Dr. John Ise of the University of Kansas, in his testimony last fall, before the Temporary National Economic Committee, said:

"In various respects the industry presents a picture suggestive of monopoly. The oil business is largely in the hands of 20 large integrated companies. In 1938 the investment of the 20 major companies was slightly in excess of $8,000,000,000 of a total between eleven and fourteen billions—or roughly two-thirds of the total."

He gave vital figures, chiefly for 1938.

The 20 oil companies have two-thirds of the total investment in the industry, about a fourth of the producing oil wells, over half of crude-oil production, nearly three-fourths of crude-oil pipe-line mileage, eight-ninths of pipe-line operating income, and nearly the same of daily cracking capacity, and over four-fifths of production and domestic sales of gasoline.

Mr. William J. Kemnitzer, economic geologist, in his book published by Harper & Bros.—"Rebirth of Monopoly"—"A Critical Study of Economic Conduct in the Petroleum Industry," lists the total assets at the close of 1936, of the 20 major oil companies, aggregating $8,257,557,108—of which Standard Oil Co. of New Jersey had $1,814,849,697.

These companies are: Standard Oil Co. (New Jersey), Cities Service Co., Socony-Vacuum Oil Co., Inc., Standard Oil Co. (Indiana), Standard Oil Co. of California, Texas Corporation (The), Gulf Oil Corp. of Pennsylvania, Shell Union Oil Corporation, Consolidated Oil Corporation, Tide Water Associated Oil Co., Phillips Petroleum Co., Atlantic Refining Co., Pure Oil Co. (The), Union Oil Co. of California, Ohio Oil Co. (The), Sun Oil Co., Continental Oil Co., Mid-Continent Petroleum Corporation, Standard Oil Co. (Ohio), (The), and Skelly Oil Co.

ROCKEFELLER INTERESTS DOMINATE EIGHT MAJOR OIL COMPANIES

Though publicity agents for the Rockefeller family have been trying to create the impression that that family has very little interest now in the Standard Oil Companies, the Temporary National Economic Committee has proven they are in them up to the hilt.

This Government committee shows that the Rockefellers and their institutions, dominate eight of the major oil companies, and draw millions in profits therefrom.

They stand to be major beneficiaries of conservation under private ownership, which resolves itself into heavy conservation of profits.

Will not such profits in case of a long war be stupendous?

John D. Rockefeller, Jr., was shown to be the second largest stockholder in Standard Oil Co. of New Jersey (the largest company), and the largest stockholder in Socony-Vacuum Oil Co. and Ohio Oil Co.

His holdings in these three companies, out of all his oil holdings, were in October 1939 over $117,000,000.

He is listed as holding 1,715,722 shares of capital stock of Standard Oil Co. of New Jersey, while the Chase National Bank, which the Rockefellers control, holds in addition 600,000 shares in trust for Rockefeller relatives.

As Standard Oil Co. of New Jersey paid cash dividends of $2.50 in 1938, and $1.25 in 1939, the Rockefeller family received from this one company in these 2 years, about $8,684,000.

The Rockefeller Foundation, and the Rockefeller Institute for Medical Research also held in 1939, more than 1,160,000 shares of Standard Oil Co. of New Jersey.

Labor Research Association estimates from figures of the T. N. E. C. that together, the Rockefeller family, and Edward S. Harkness, owned in 1938—10,418,725 shares of stock in Standard Oil Co. of New Jersey, Standard Oil Co. of Indiana, Socony-Vacuum Co., Ohio Oil Co., and Consolidated Oil Co.

In 1938 the Rockefeller family received cash dividends from these five companies, amounting to $12,176,488; in 1939—$8,120,801.

The same principle obtains for small as well as large owners.

2. *The four competing energy-producing natural resources—coal, oil, water power, and gas—must be coordinated and operated as a unit. This cannot be done under private ownership.*—Almost two decades ago Hon. Gifford Pinchot, outstanding conservationist, stated:

"Giant power seeks the cheapest sources of power, and hence the cheapest rates. It proposes to create, as it were, a great pool of power into which power from all sources will be poured and out of which power for all uses will be taken."

The Energy Resources Committee reported to the National Resources Committee:

"The energy resources—coal, petroleum, natural gas, and water power—lie at the foundation of our industrial civilization. Except for water, they are exhaustible resources, and water power at best, could supply only a fraction of our energy requirements. Of the mineral fuels, we have an abundance, in comparison with the rest of the world.

"Nevertheless, our resources of the higher grade fuels—petroleum, natural gas, and the superior coals—are distinctly limited."

President Roosevelt, in transmitting this report to Congress this year, stated:

"It is difficult in the long run to envisage a national coal policy, or a national petroleum policy, or a national water-power policy, without also in time, a national policy directed toward all of these energy producers, that is a national energy resources policy."

The Energy Resources Committee also stated:

"Even though energy from water may not practically be used at present more than 200 or 250 miles from the power site, industry can gravitate into the orbit of a water-power site."

This is reminiscent of the dictum of the late railroad baron James J. Hill, who blocked the development of coal mines in the Middle West, so the railroads in which he had a "public interest," could haul coal half way across the continent, and then when eastern supplies were exhausted, western coal lands could be opened up, for coal can travel east, as well as west.

The committee's suggestion that the mountain should travel to Mohamet, if Mohamet could not get to the mountain, emphasizes the necessity for what Gifford Pinchot so aptly called "Giant power." The four competing natural resources must, from the standpoint of private and national economy, be hooked up.

Our experience has been ample to demonstrate that the failure of private owners to forego profits, is inevitable.

Public control may reduce waste, but does not reduce costs, nor ensure adequacy.

The Energy Resources Committee summarizes our natural resources.

"Briefly, our reserves may be stated as follows:

"(*a*) Coal of all ranks, 3,000 billion tons or the equivalent of 2,500 billion tons of bituminous coal, in comparison with 1937 production of about one-half billion tons and accumulated production through that year of 23 billion tons.

"(*b*) Petroleum in proven natural reservoirs, 15 million barrels, in comparison with 1937 consumption of 1¼ billion barrels. These proven reserves are equal to about 4 billion net tons of equivalent bituminous coal.

"(*c*) Proven natural gas reserves, from 60 to 100 trillion cubic feet, in comparison with 1937 consumption of about 2⅓ trillion cubic feet. The reserve is equivalent to 3 or 4 billion net tons of bituminous coal.

"(*d*) Recoverable oil from oil shale has been estimated at 92 billion barrels, or the equivalent of 21 billion net tons of bituminous coal. This oil, be it noted, is recoverable only at a cost far above the present cost of natural reservoir oil. In fact, it is probable from present techniques that coal will provide liquid fuels at lower cost than shales.

"(*e*) Feasible undeveloped water-power sites of the United States, when a market for their output exists, are estimated to be capable of producing six times as much energy as those now developed, but only a little more than twice the electric energy produced in 1937 for public use by fuel and water-power plants combined (64 percent by fuel plants and 36 percent by hydro plants).

"All our water power, including both that already developed and that feasible of development, could produce energy annually equivalent to only about one-fourth of the energy contained in all mineral fuels consumed in the country in 1937 for all purposes. Thus it can be seen that water power can supply only a fraction of our energy requirements. The mineral fuels must bear the main burden."

While reporting the total coal reserves at about 3,000 billion net tons, the Energy Resources Committee states:

"More than half this total represents low grade bituminous coal and lignite. * * * Almost 70 percent of our total reserve lies in the semiarid plains, or in the Rocky Mountains, far from centers of population and industry.

"About 85 percent of our present production is from the 30 percent of our reserves east of the Mississippi River."

3. *Basic natural resources belong to the people, and all regulatory measures such as the Guffey Coal Act, the Connally Hot Oil Act, and this bill, postpone the assertion by Congress of that public ownership, and the development and utilization of these resources for the benefit of the people.*—In a report to the President in December 1934, the National Resources Committee, of which Secretary of the Interior Ickes is chairman, stated:

"With the exception of the unreserved public domain, most of the serious maladjustments apply to land in private ownership and grow out of the virtually unlimited powers of use and abuse which we have permitted in our system of private property in land.

"Basically, however, absolute ownership still resides in the State (either individual Commonwealth or Nation), and under the police power the State may constrain the private use of land within bounds set by the public interest.

"Thus far in the rural areas there has been but little exercise by the State of it reserved rights in land. Considerations of public welfare may require a further extension of these rights."

Courage to assert this "absolute ownership" is imperative.

The bill (H. R. 3121, 76th Cong. 1st sess.) introduced by Representative John M. Coffee of Washington, asserts the power of Congress to recover the four competing natural resources—coal, oil, water power, and gas—for the people, and makes it effective.

It provides for negotiation with present holders of title, with condemnation in reserve, and bases payment upon past and probable future earnings—not upon value created by nature.

Present owners know severance taxes could render titles valueless.

The Coffee bill makes possible effective and economic coordination of the four major energy sources.

It anticipated the findings of the Energy Resources Committee:

"Bituminous coal, petroleum, natural gas, anthracite coal, and water power—in descending order of relative contribution to the Nation's energy supply—these are the energy foundation stones of our industrial civilization."

No "grid" system will ensure cheap current under private ownership.

"Economic planning" is a will-o'-the-wisp, while ownership and control is vested in private hands.

The Coffee bill also empowers the Government corporation set up, to administer the four natural resources, to manufacture all appliances and equipment essential to utilization of low cost energy.

4. *Costs of raw materials must be reduced.*—However well intentioned the high protective policies of the Old Guard Republicans, and the older subsidized scarcity policies of the New Deal, both 1929 and 1940 attest their failure.

Cheapening the cost of raw materials—of which natural resources are a highly important part—to both processors and consumers is not, of itself, enough, but is the first step in raising the standard of living of the masses.

No subsequent Government regulation, or even control, of processors and distributors of natural resources, is a substitute for reducing the primary profits costs of natural resources.

Subsequently to this step, as the editorial from Collier's cited, states:

"Whether we like it or not, government will muscle into all our lives a lot more intimately than it ever did before."

This muscling into our lives involves muscling out a lot of profits, starting with profits on natural resources which derive their value from act of providence, not act of owner.

CONCLUSION

The effects of the bill H. R. 7372 will be threefold: (1) To hamper and retard the cooperative movement; (2) to enhance and conserve profits of present owners; (3) to reduce standards of living below those attainable under wisely achieved public ownership.

It should be permanently abandoned, and the Coffee bill, H. R. 3121 substituted therefor.

There is attached a reprint from the Congressional Record by Senator Frazier—a pamphlet—Government Monopolies Are Constitutional, by an eminent publicist, Mr. Irving Brant. author of Storm Over the Constitution.

Mr. COLE. On December 11, 1939, at the time Col. Ernest O. Thompson, member of the Railroad Commission of Texas, was testifying before the committee in New Orleans, the following colloquy took place:

Mr. COLE. Can you tell me from your own recollection now any recommendations that the compact commission has made to the oil-producing States?

Mr. THOMPSON. Illinois.

Mr. COLE. Yes.

Mr. THOMPSON. And Arkansas.

Mr. COLE. Yes.

Mr. THOMPSON. Many times. The Illinois State geologist has been at about three of our meetings. We have kept an accurate account on their production practices and we have discussed it in open meetings, and made suggestions. The record is replete with suggestions.

Mr. COLE. What recommendations have you made to Illinois?

Mr. THOMPSON. We have not gotten up and named Illinois.

Mr. COLE. You know what I mean. I mean a dignified, authentic recommendation coming from the legally constituted compact commission. I do not mean a mere report of proceedings at some conference which has taken place.

Mr. THOMPSON. The meetings are dignified. A transcript is made of them and of the complete recommendations. I will submit a transcript of the Sante Fe meeting.

Mr. COLE. I have seen one of those.

Mr. THOMPSON. You will find Mr. Bell's testimony therein. He is their State geologist. He was at our last meeting.

Mr. COLE. This was the Sante Fe meeting?

Mr. THOMPSON. I will be glad to submit a transcript of that meeting and you will find a discussion in there at great length about Illinois, as reported by the State geologist.

Mr. COLE. Can you find any recommendations of the compact commission which were made a part of the minutes of the compact group, such recommendations going to the State of Illinois or any other State?

Mr. THOMPSON. We have not taken and singled out States, but we make general recommendations on standards, for example.

Mr. COLE. What, for example?

Mr. THOMPSON. We have a very fine committee on standards.

Mr. COLE. What were your recommendations to Illinois?

Mr. THOMPSON. I am afraid you are asking about one thing and I am talking about another. I mean by this, we have got a committee on minimum standards made up of Mr. Gallagher, Mr. Pogue, and Mr. Alexander, and in the transcript you will find a very definite set of recommendations which that committee made. I think that that is as fine a committee as you will find anywhere.

Mr. COLE. At a later date when you say you will appear before the committee for the compact——

Mr. THOMPSON. As a representative of the compact.

Mr. COLE. I think you will be given an opoprtunity to provide that for us.

Mr. THOMPSON. I will get it up for each one, each time.

Mr. COLE. I would like to have it from the proceedings of the compact group and have it show——

Mr. THOMPSON (interposing). What we have done?

Mr. COLE. No; not what you have done; but any recommendations you have ever made to oil-producing States looking to the prevention of waste.

Mr. THOMPSON. Yes; we will be very glad to bring that to the hearings.

At the same hearing Congressman Wolverton asked the following question:

Mr. WOLVERTON. I want to make further inquiry on that subject when an opportunity is presented, while you are before us. The chairman has not finished, and I do not want to continue at this time. May I ask the question when he appears at the afternoon session that he come prepared to offer to the committee the records of the State compact commission, as well as your own Texas commission, as to the resolution that was passed and any minutes relating to the resolution which shut off production entirely on August 14 after there had been a reduction in the price of crude by one of the major oil companies.

(In lieu of further appearance by Colonel Thompson before the committee, because of illness and a meeting of the Railroad Commission of Texas, toward the close of the hearings in January, Colonel Thompson submitted the following letter:)

RAILROAD COMMISSION OF TEXAS,
Austin, March 13, 1940.

Hon. WILLIAM P. COLE, Jr.,
Chairman, Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D. C.

DEAR CHAIRMAN COLE: In compliance with requests made to me by the subcommittee at its hearing in New Orleans, La., on December 11, 1939, at which time I appeared before the committee and promised to furnish this data.

This information was sent to you on Monday, March 11, 1940, and in order to bring your attention as to what it applies to, may I give you the following explanation.

On page 18 MB of the draft as furnished me of the transcript on the testimony, you ask for a concrete recommendation wherein the compact had made recommendations to oil-producing States. I advised you then that recommendations were in the transcripts of the hearings and to supplant this, I mailed you a copy of the transcript of the compact meeting held at Santa Fe, N. Mex., on July 19 and 20, 1939.

On page 19 MB, you ask for a copy of the Railroad Commission of Texas' State-wide proration order for the month of August 1939, and also a copy of the commission's order shutting down all wells. These were the orders I mailed you.

On page 20 MB, Mr. Wolverton brought up the point that a hearing was held to secure evidence on August 28, 1939, after the shut-down order was already in effect and I advised that the commission had held previous hearings to secure the testimony. I also advised you that I would furnish this supplemental evidence. I mailed you a transcript of the Railroad Commission of Texas' State-wide hearing held in June 1939, as evidence of previous State-wide hearings.

I asked permission to furnish the committee with a brief on the constitutionality of this bill and it was graciously granted me and this brief was personally presented by Hon. Jack Blalock.

I trust this will complete the evidence requested of me in that hearing and if there is any other data that the committee desires that I furnish, I shall be only too happy to do so.

With kindest personal regards, I am

Sincerely yours,

ERNEST O. THOMPSON.

Mr. COLE. This letter obviously does not answer the questions propounded at the New Orleans hearings. The committee considered the advisability of reopening the hearings for the purpose of having Colonel Thompson testify further but in view of his illness at the time and a request by phone that the matter be handled by correspondence, I addressed the following letter to Colonel Thompson:

April 4, 1940.

Col. Ernest O. Thompson,
Railroad Commission of Texas,
Austin, Tex.

Dear Colonel: With your letter of March 13 last, you forwarded a transcript of testimony taken at the State-wide hearing held in Austin, Tex., on June 12, 1939; transcript of evidence taken at the meetings of the compact commission in Santa Fe, N. Mex., July 19–20, 1939, together with other pamphlets.

According to your letter, these were forwarded with the hope that they would be used in answer to the questions asked by Mr. Wolverton and me during the hearings in New Orleans in December. I see no occasion to insert these voluminous statements in our hearings because they are of but little interest to the committee. However, I assume you do want to appear in the hearings the answer to the questions asked of you, which to date remain unanswered. I refer to the question I asked you, that a copy of any or all concrete and definite recommendations made by the compact commission as such, to any oil-producing State, be forwarded to us. If such record is available and you will send it to me, I shall be glad to insert it in the record but if such is not received, I will assume it does not exist. I am frank to state that any part of the transcript which you have sent to me and which I have read does not comply with that request.

As to Mr. Wolverton's request, he wanted a copy of the testimony taken at the meeting of the compact commission in August 1939, at the time of the shut-down order, because we were all told that a meeting of that kind was held at the time the order was passed. We realize that the basis for the order of August 1939 might be found, according to you and others, in the proceedings of previous meetings, but the August meeting is the one in which we are especially interested.

As our hearings are about to close and go to print, I wish you would answer this letter immediately because I have explained to the committee your desire to be relieved of personal appearance because of your health.

I hope your health is much improved and with kind personal regards, I am,

Very sincerely yours,

——— ———,
Chairman, Subcommittee on Petroleum Investigation.

Mr. Cole. The transcript of testimony and proceedings referred to in the letter from Colonel Thompson, which the committee felt was not advisable to insert in the record were quite voluminous and did not in any way answer the questions which were presented to Colonel Thompson.

Colonel Thompson further replied by letter of April 13, 1940, as follows:

Railroad Commission of Texas,
Austin, April 13, 1940.

Hon. William P. Cole,
Chairman, Subcommittee on Petroleum, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D. C.

Dear Mr. Chairman: In reply to your letter, I wish to state that on many occasions the Interstate Compact Commission definitely recommended to each of the compacting States that the States limit their production to the market demand indicated by the Bureau of Mines in its monthly estimates. The transcripts are full of these recommendations, and the record clearly shows that the compacting States have largely followed these recommendations. I am enclosing herewith a record of this performance.

The recommendations of the compact commission have always been carried to the compacting States through the members to the compact, who were appointed by the Governors of the States themselves, and it has always been felt that the Governors themselves, or their duly accredited representatives of the sovereign States, were the proper ones to carry these recommendations back to their States. This, we have always felt, was the spirit of the compact.

A committee of the Interstate Oil Compact Commission, headed by the Honorable Homer Hoch of Kansas, a distinguished former Member of Congress, compiled the laws, rules, and regulations of the various oil-producing States and made a report covering some 168 pages, and this report was mimeographed and sent to the oil-producing States.

Many scientific discussions and papers by distinguished authorities, such as Mr. E. DeGolyer, Mr. Alexander Sachs, Mr. Joseph Pogue, Mr. Fred Van Covern, the Honorable Hiram Dow, and many others, have been delivered at the compact meetings, and these papers have all been completely reported in the transcripts of the proceedings of the Interstate Compact Commission, and these transcripts have been widely distributed to all the compacting States, the regulatory bodies of the States and, naturally, to the Governors of the oil-producing States, through their representatives, and these discussions, and the reports of these discussions, have been the method through which the compact has sought to carry the information to all of the oil-producing States.

With regard to the minutes of the meeting of the Interstate Oil Compact Commission, which was held August 15, in Oklahoma City, these minutes were offered at the hearing by our secretary, Mr. Orr, and exactly what happened was delineated in my statement, which I have previously sent to you. If Mr. Orr did not submit the minutes as a part of the record, I shall have him do so, and I am writing him today to forward them to you.

A perusal of the production records, as reported by the Bureau of Mines, and as weekly reported by the Oil and Gas Journal and the Oil Weekly, show that just prior to the shut-down in August, the United States was producing oil at an all-time peak. This was before our Texas Railroad Commission, as we constantly keep informed on the statistics of production, consumption, and storage, both of gasoline and crude oil, and the cut in price which came at that time was added evidence to us that the breaking point in production had been reached and that promp action was necessary if we were to effectively prevent physical waste. This action we took, and we did prevent actual physical waste.

I should like for these statements to be added to my statement if the record has not been closed.

I am glad to tell you that my health is improved and I am about over the aftereffects of the flu, although the high-powered medicine which they gave me, sulphanilamide, has been not very pleasant.

With kindest regards, I am,

Sincerely your friend,

Ernest O. Thompson.

Mr. Cole. Article VI of the Interstate Oil Compact provides, in part, as follows:

> Each State joining herein shall appoint one representative to a commission hereby constituted and designated as the "Interstate Oil Compact Commission," the duty of which said commission shall be to make inquiry and ascertain from time to time such methods, practices, circumstances, and conditions as may be disclosed for bringing about conservation and prevention of physical waste of oil and gas, and at such intervals as said commission deems beneficial it shall report its findings and recommendations to the several States for adoption or rejection.

My questions to Colonel Thompson were based on knowledge the committee possessed that not since the formation of the Interstate Compact Commission had any recommendation, known to the committee, been made as contemplated by article VI. It is apparent from the final reply made by Colonel Thompson that the information in the possession of the committee was correct.

(During the testimony of Secretary of the Interior Ickes, it was stated that at a later date the Department of the Interior would file a brief in support of the constitutionality of H. R. 7372. The brief is filed herewith:)

Memorandum Re Constitutionality of H. R. 7372, the Proposed "Petroleum Conservation Act of 1939"

(Submitted by Nathan R. Margold, Solicitor, Department of the Interior, to the subcommittee of the House Committee on Interstate and Foreign Commerce, 76th Cong., 2d sess., Representative William P. Cole, chairman)

It is the purpose of this memorandum to discuss the constitutional validity of such Federal regulation of waste in the production and storage of petroleum as is contemplated in the proposed "Petroleum Conservation Act of 1939."

A sectional analysis of the proposed legislation will be found in volume 1 of these hearings, at pages 64 to 70. However, for convenient reference the provisions of the bill will be summarized briefly.

In section 2 of the proposed legislation Congress finds "that in the production and storage of petroleum from deposits in the United States, the employment of methods and practices which are wasteful of petroleum * * * (1) is inimical to the maintenance of reserves of petroleum, and of the facilities for the recovery and transportation thereof, available for military and supporting civilian needs in an adequate national defense; [and] (2) burdens and obstructs interstate commerce and causes harmful diversions in such commerce" in several ways. Therefore, it is declared to be the policy of Congress to exercise its powers to provide for the maintenance of an adequate national defense and to regulate interstate and foreign commerce by furthering the conservation of petroleum through the elimination of wasteful methods and practices employed in the production and storage of petroleum, and to encourage the several States in their efforts to prevent the waste of this essential natural resource. To accomplish this latter purpose, section 19 of the bill extends the application of the Connally "Hot Oil" Act of 1935 (49 Stat. 30), to include petroleum and its products produced in violation of the bill and thereby prohibits the shipment of such petroleum in interstate commerce.

The administrative set-up provided is designed to carry out this policy of the Congress. Provision is made for a Commissioner of Petroleum Conservation who is authorized to carry on investigations in any oil field in the United States in order to determine whether the production of oil and gas therein involves avoidable physical waste of petroleum. The investigation and determination are to be carried out under a definite formula laid down by the Congress (sec. 5). If, after such investigation, it is found that avoidable waste is occurring or is imminent, such waste is to be eliminated and prevented by (1) voluntary agreement among the operators in the field, or (2) enforceable regulations prescribed by the Commissioner (secs. 6 and 7). Precise standards for the drafting of such regulations so as to effectuate the declared policy of the Congress are set forth (sec. 6), and the employment of methods and practices therein designated as wasteful is prohibited (sec. 9). Penalties are provided for the violation of the act and regulations (secs. 12).

I. THE PROPOSED "PETROLEUM CONSERVATION ACT OF 1939," IF ENACTED, WOULD BE A VALID REGULATION OF COMMERCE AMONG THE SEVERAL STATES

A. *Congress may regulate local productive activity which closely and substantially affects interstate commerce.*—The commerce clause vests Congress with complete and plenary authority to regulate commerce among the several States. The power is "complete in itself, may be exercised to its utmost extent, and acknowledges no limitations, other than are prescribed in the Constitution." *Gibbons* v. *Ogden*, 9 Wheat. 1, 96. As was said by Mr. Chief Justice Hughes in *National Labor Relations Board* v. *Jones & Laughlin Steel Corp.*, #301 U. S. 1, 36–37:

> "* * * The fundamental principle is that the power to regulate commerce is the power to enact 'all appropriate legislation' for 'its protection and advancement' (*The Daniel Ball*, 10 Wall. 557, 564); to adopt measures 'to promote its growth and insure its safety' (*Mobile County* v. *Kimball*, 102 U. S. 691, 696, 697); 'to foster, protect, control and restrain.' *Second Employers' Liability Cases* [223 U. S. 1], *supra*, p. 47. See *Texas & N. O. R. Co.* v. *Railway Clerks* [281 U. S. 548], *supra*. That power is plenary and may be exerted to protect interstate commerce 'no matter what the source of the dangers which threaten it.' *Second Employers' Liability cases*, p. 51; *Schechter Corp.* v. *United States* [295 U. S. 495], supra * * *."

The congressional power over interstate commerce authorizes the regulation of the movement of goods across State lines and of the instrumentalities which convey them. But the power goes much further, for "of what avail is it to protect the facility of interstate transportation, if interstate commerce is to be throttled with respect to the commodities to be transported"? *N. L. R. B.* v. *Jones & Laughlin*, 301 U. S. 1, 42. Congressional authority extends to the regulation of all activities which substantially affect interstate commerce, or which burden, obstruct or interfere with it. *Swift and Co.* v. *United States*, 196 U. S. 375; *Minnesota Rate cases*, 230 U. S. 352; *Stafford* v. *Wallace*, 258 U. S. 495; *Currin* v. *Wallace*, 306 U. S. 1. And this is none the less true although the activity has occurred wholly within a State before movement in interstate commerce has commenced. *Local 167* v. *United States*, 291 U. S. 293; *United States* v. *Reading Co.*, 226 U. S. 324; *Dahnke-Walker Co.* v. *Bondurant*, 257 U. S. 282; *Santa Cruz Fruit Packing Co.* v. *N. L. R. B.*, 303 U. S. 453. Moreover, Congress may prohibit wholly intrastate activities which, if permitted, would result in restraint of interstate commerce. *Bedford Cut Stone Co.* v. *Stone Cutters' Association*, 274 U. S. 37; *Coronado Coal Co.* v. *United Mine Workers*, 268 U. S. 295; *Local 167* v. *United States*, 291 U. S. 293. "Although activities may be intrastate in character when separately considered, if they have such a close and substantial relation to interstate commerce that their control is essential or appropriate to protect that commerce from burdens and obstructions, Congress cannot be denied the power to exercise that control." *N. L. R. B.* v. *Jones & Laughlin*, 301 U. S. 1, 37; *Schechter Corp.* v. *United States*, 295 U. S. 495.

Moreover, the close and intimate effect which brings the subject within the reach of Federal power may be due to activities in relation to productive industry. *N. L. R. B.* v. *Jones & Laughlin*, 301 U. S. 1, 38; *Santa Cruz Fruit Packing Co.* v. *N. L. R. B.*, 303 U. S. 453. These cases clearly overrule *Carter* v. *Carter Coal Company*, 298 U. S. 238, on its interstate commerce point.[1] In the *Carter case* it was held by a divided court that the effect on interstate commerce in coal of the labor conditions involved in its production was indirect and, consequently, beyond Federal regulation under the commerce clause. In the *Labor Board cases*, supra, the same problem was involved, and there the court reached the contrary conclusion. The difference in result was caused by the change in the method of approach which the court employed in deciding what "affects commerce." It is still necessary that the activity sought to be regulated directly and substantially affects commerce. But the requirement of directness in the sense of immediate relation between the activity in question and the movement of goods in commerce has been changed into a broader concept of "substantial effect" from a factual point of view. As Mr. Chief Justice Hughes said in *N. L. R. B.* v. *Jones & Laughlin*, in response to the argument, based on the *Carter case*, that the activity involved, being production, had not a direct effect upon interstate commerce and consequently was not subject to Federal regulation (301 U. S. 1, 40–41):

> "* * * the fact that the employees here concerned were engaged in production is not determinative. The question remains as to the effect upon interstate commerce of the labor practice involved. In the *Schechter case* [295 U. S. 495], supra, we found that the effect there was so remote as to be beyond the federal power. To find 'immediacy or directness' there was to find it 'almost everywhere,' a result inconsistent with the maintenance of our Federal system. In the *Carter case* [298 U. S. 238], supra, the Court was of the opinion that the provisions of the statute relating to production were invalid upon several grounds—that there was improper delegation of legislative power, and that the requirements not only went beyond any sustainable measure of protection of interstate commerce but were also inconsistent with due process. These cases are not controlling here."

And in *Santa Cruz Fruit Packing Co.* v. *N. L. R. B.*, 303 U. S. 453, 463, 464:

> "The power of Congress extends not only to the making of rules governing sales of petitioner's products in interstate commerce * * * but also to the protection of that interstate commerce from burdens, obstructions and interruptions, whatever may be their source. *Second Employers' Liability cases*, 223 U. S. 1, 51. *The close and intimate effect which brings the subject within the reach of Federal power may be due to activities in relation to productive industry, although that industry when separately viewed is local. It is upon this well-established principle that the constitutional validity of the National Labor Relations Act has been sustained.* * * *" [Italics supplied.]

Thus, the validity of Federal regulation no longer depends on the number of steps existing between the activity in question and interstate commerce, or on the nature of the activity, but rather on whether the activity might in fact result in an obstruction to commerce. "It is the effect upon interstate or foreign commerce, not the source of the injury, that is the criterion" of the validity of Federal regulation of intrastate activities. *Consolidated Edison Co.* v. *N. L. R. B.*, 305 U. S. 197, 222.

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[1] The *Carter Coal case*, has been treated as overruled by circuit courts of appeal, and by dissenting justices in the Supreme Court. See *N. L. R. B.* v. *Santa Cruz Fruit Packing Co.*, 91 F. (2d) 790, 792 (C. C. A. 9th, 1937); *N. L. R. B.* v. *Carlisle Lumber Co.*, 94 F. (2d) 138, 144 (C. C. A. 9th, 1937); *Clover Fork Coal Co.* v. *N. L. R. B.*, 97 F. (2d) 331 (C. C. A. 6th, 1938); dissenting opinions of Butler, J., in *Santa Cruz Fruit Packing Co.* v. *N. L. R. B.*, 303 U. S. 453, 469; *Consolidated Edison Co.* v. *N. L. R. B.*, 305 U. S. 197, 239.

The transactions subject to regulation by Congress may often include matters which may be regulated by the States under their police power or taxed locally. If, in such cases, the State regulation does not burden or discriminate against interstate commerce or in any way conflict with the Federal law, both Federal and State regulations may apply to such activities at the same time. Compare *Dickson* v. *Uhlmann Grain Co.*, 288 U. S. 188, with *Chicago Board of Trade* v. *Olsen*, 262 U. S. 1; *Minnesota* v. *Blasius*, 290 U. S. 1, with *Stafford* v. *Wallace*, 258 U. S. 495; *Oliver Iron Mining Co.* v. *Lord*, 262 U. S. 172, with *Coronado Coal Co.* v. *United Mine Workers*, 268 U. S. 295; *Townsend* v. *Yeomans*, 301 U. S. 441, with *Currin* v. *Wallace*, 306 U. S. 1. "The rule which marks the point at which State taxation or regulation becomes permissible" does not necessarily prevent "interference by Congress in cases where such interference is deemed necessary for the protection of commerce among the States." *Swift and Co.* v. *United States*, 196 U. S. 375, 400. But if conflict should arise between Federal and State regulation of these activities, the State law must yield to the paramount Federal authority. *Minnesota Rate cases*, 230 U. S. 352; *Florida* v. *United States*, 292 U. S. 1; *Consolidated Edison Co.* v. *N. L. R. B.*, 305 U. S. 197; *Houston E. & W. Texas Ry.* v. *United States*, 234 U. S. 342.

It is clear, therefore, that regulation of the production of petroleum by the States under their police power (*Champlin Refining Co.* v. *Corporation Commission*, 286 U. S. 210), does not preclude the exercise of Federal power over the same subject matter. In fact, the *Champlin* case was referred to in *Santa Cruz Fruit Packing Co.* v. *N. L. R. B.*, as having no application to the question of Federal control of productive industries in the following language (303 U. S. 453, 466):

> "* * * Nor are the cases in point which are cited by petitioner with respect to the exercise of the power of the State to tax goods, which have not begun to move in interstate commerce or have come to rest within the State, or to adopt police measures as to local matters. [The cases to which the court refers (see p. 456) are: *Kidd* v. *Pearson*, 128 U. S. 1; *Champlin Refining Co.* v. *Corporation Commission*, 286 U. S. 210; *Federal Compress Co.* v. *McLean*, 291 U. S. 17; *Oliver Mining Co.* v. *Lord*, 262 U. S. 172; *Heisler* v. *Thomas Colliery Co.*, 260 U. S. 245; *Arkadelphia Milling Co.* v. *St. Louis S. W. R. R.*, 249 U. S. 134.] *In that class of cases the question is not with respect to the extent of the power of Congress to protect interstate commerce, but whether a particular exercise of State power in view of its nature and operation must be deemed to be in conflict with that paramount authority.* *Bacon* v. *Illinois*, 227 U. S. 504, 516; *Stafford* v. *Wallace* [258 U. S. 495], *supra*, p. 526; *Minnesota* v. *Blasius*, 290 U. S. 1, 8." [Italics supplied.]

B. *Wasteful practices in the production of petroleum closely and substantially affect interstate commerce.*—The evidence which has been gathered by this committee and by the Temporary National Economic Committee to inform Congress with respect to the national interest in petroleum has established beyond peradventure the close and substantial relation ship between the production of petroleum and interstate commerce. See also Minerals Year Book (1939) and Energy Resources and National Policy, Report of National Resources Committee (1939), H. Doc. 160, 76th Cong., 1st sess. (1939).

1. The major part of all petroleum and its products moves in interstate commerce: It has been shown that the major portion of all petroleum and its products produced in the United States is shipped into interstate and foreign commerce and is produced with the expectation that it will be so shipped.

> "The geography of crude oil production of the United States contrasts sharply with the pattern of population and distribution. The four States of Texas, Oklahoma, Arkansas, and Louisiana contributed 66 percent of the total production in 1937, while population and gasoline consumption for this area amounted to only 9.97 and 9.44 percent, respectively, of the country's totals. On the other hand, although the States east of the Mississippi and Ohio Rivers and the eastern boundary of Indiana contributed only 2.94 percent of the total crude production they accounted for 54.78 of population and 46.94 percent of total gasoline consumption." T. N. E. C. hearings (1939), vol. 6, p. 82 (Department of Justice figures).

2. The petroleum industry is national in scope and importance: The business of producing, transporting, processing, and marketing petroleum is one of the Nation's great industries—an industry which utilizes $14,000,000,000 of capital, employs more than 1,000,000 workers, constitutes an important customer for a wide range of other industries, and supplies essential commodities to the entire

country. Consequently, the health of the oil industry is of prime importance to the well-being of the entire national economy. Moreover, cheap and rapid transportation, made possible by an abundant supply of low-priced motor fuels, supplied by the petroleum industry has been a major factor in the population-distribution pattern of the Nation. See Frey, The National Interest in Petroleum, Speech before the A. I. M. M. E. at the New York meeting (1940). Although crude oil is produced in less than half of the States, it is consumed in all 48, so that a continuous stream of commerce in petroleum is ever flowing between the various States. T. N. E. C. hearings (1939), vol. 6, pp. 42, 77. See also map of marketing areas, ibid., at p. 663.

3. The petroleum industry is dominated by 20 integrated companies whose activities are interstate in scope: The relation which the production of petroleum bears to interstate commerce is made more direct by the nature of the corporate organization of the petroleum industry. The industry is dominated by 20 gigantic, integrated companies, most of which produce, refine, transport, and market petroleum products in many States. These companies, whose activities encompass the entire industry, produce, or purchase directly from the well, the major portion of all crude oil, control four-fifths of the refining capacity and almost all of the pipe-line systems, and own, lease, or control by far the greater part of the market outlets.[2] The petroleum handled by an integrated company moves in a practically continuous current of interstate commerce from the time the movement begins underground toward the well-bore until the finished product arrives at the place of ultimate consumption. The following quotations from the T. N. E. C. hearings present a clear picture of the structural aspect of the industry:

> "* * * The industry * * * assumes an hourglass configuration, with the raw material drawn from innumerable sources, concentrated into channels of flow through the transportation and refining systems, and again deploying into myriad lines of movement to countless points of final consumption. Vast amounts of capital are essential to the operation of this system, functional coordination of the several parts is achieved through integration of activities and the technologic factor is pervasive and of paramount importance." [Pogue, vice president, Chase National Bank, at p. 42, vol. 6.[2]
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> "Viewed structurally, the oil industry presents another peculiarity of considerable significance. It is really a succession of industries, integrally related in production of crude oil, transportation, refining, and marketing. Most of the oil business is done by large, integrated companies, which perform all the functions from derrick to service station. There are, it is true, some independent producers, refiners, and marketers, but they do only a small proportion of the total business, and they operate under very serious difficulties in competition with the great integrated companies. It is for that reason, indeed, that integration has really been forced upon those in the industry. With integration has gone the growth of very large business units, units larger than are found in most fields of American industry.
>
> "* * * The oil business is largely in the hands of 20 large integrated companies. * * *" [Dr. J. B. Ise, at p. 3, vol. 6.]
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> "Integration is the uniting into one business of several of the stages through which a material passes before it reaches the ultimate consumer. The conditions under which integration is desirable are: (1) Large volume of business in a single commodity group; (2) highly specialized production, manufacturing, transportation and distribution techniques; and (3) substantial advantages (at some stages) in large-scale operation. These conditions characterize the petroleum industry, and it follows therefore that the relations between any one of these stages of the industry and the others next to it are peculiarly close. The refiner needs to be assured of his market. The marketer needs to be assured of his supply. Both need a steady flow of products for efficient operation. Neither is interested in other than the one major product and its related group of byproducts. Neither can transfer his specialized equipment to the handling of some different product. There is a high degree of mutual interdependence imposed by the facts. If such relationships are not provided by common ownership, they must be provided by contractual arrangements." [Farish, president, Standard Oil Co. of New Jersey, at p. 424, vol. 7.]

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[2] See chart, p. 10.

Petroleum not produced and controlled by these companies is marketed in direct competition with the products of these companies. See Federal Trade Commission "Report on Petroleum." S. Doc. 61, 70th Cong., 1st sess.; T. N. E. C. hearings (1939), vol. 6, pp. 3–5, 42–45.

Percentage ownership or control by major oil companies in various branches of the petroleum industry [1]

Branch of industry	Date	Number of companies	Percent	Source
Total investment	Dec. 31, 1938	20	66. 7	2
Domestic producing oil wells	Dec. 31. 1937	20	23. 7	4
Production of crude oil	1937	20	52. 5	4
Crude-oil gathering pipe-line mileage	June 30, 1936	20	57. 4	4
Crude-oil trunk pipe-line mileage	Jan. 1, 1938	14	89. 0	3
Total crude-oil pipe-line mileage	June 30, 1936	20	72. 0	4
Investment in pipe lines	Dec. 31, 1938	15	77. 4	3
Pipe line operating income	1938	15	86. 4	3
Deadweight tonnage of tankers	Sept. 30, 1938	15	87. 2	1
Stocks of refinable crude oil	Dec. 31, 1937	20	96. 5	4
Daily crude oil capacity	Jan. 1, 1938	20	75. 0	5
Daily cracking capacity	do	20	85. 2	5
Crude-oil runs to stills	1937	20	82. 6	4
Production of gasoline	1937	20	83. 8	4
Stocks of finished gasoline	Dec. 31, 1937	20	90. 0	4
Stocks of lubricants	do	20	93. 0	4
6 selected stocks figures	do	20	94. 2	4
Gasoline pipe-line mileage	Jan. 1, 1938	16	96. 1	2
Domestic sales of gasoline	1938	18	80. 0	6

[1] Verbatim record of the proceedings of Temporary National Economic Committee, vol. 6, p. 4.

1. U. S. Maritime Commission and Petroleum Conservation Division, Department of the Interior.
2. Moody's Manual of Investments; Temporary National Economic Committee Questionnaire for Oil Companies, and American Petroleum Institute.
3. Interstate Commerce Commission.
4. U. S. Bureau of Mines.
5. U. S. Bureau of Mines. Includes Richfield Oil Corporation.
6. Temporary National Economic Committee Questionnaire and American Petroleum Institute.

4. All petroleum produced affects interstate commerce in petroleum owing to factors of (*a*) Geology: That part of the production of petroleum which ultimately goes into intrastate commerce is extracted from the same reservoirs as that which moves into the stream of interstate commerce. Because of the geologic nature of oil-bearing formations, if, through wasteful practices by the intrastate producer the reservoir energy is dissipated or the channeling of water through the oil sands is permitted, an entire field may be adversely affected. Moreover, if the intrastate producers, by the employment of methods involving physical waste, produce at a greater rate than proper practice dictates to secure the optimum yield, the interstate producers in the pool will be forced to adopt similar practices or fail to get their just share of the oil from the common source of supply.

(*b*) Intermingling: As soon as the oil leaves the well that portion destined to move in interstate commerce is usually mingled with that destined for intrastate consumption and is further commingled as it passes through the gathering pipe lines into the trunk lines. At the large refineries the intermingling becomes complete; no attempt is made to segregate the petroleum whose refined products are to be consumed locally from that to be shipped out of State. And the refined products are disposed of indiscriminately to meet local and intrastate demands. As in the case of grain at terminal elevators, it is impractical, if not impossible, to keep the two separate.

(*c*) Interstate character of the petroleum market: The oil of the producer for local use contributes to the total supply and consequently affects the interstate price regardless of where it is produced or consumed. It either competes directly with oil moving in interstate commerce, or if it fills a local demand, it forces other oil into the channels of interstate commerce. In short, crude oil produced in each State is a potential competitor of crude oil produced in every other producing State. See T. N. E. C. hearings (1939), vol. 6, pp. 166–167, 397, 473–475; Petroleum Investigation (1939), 330, 510. Because of the standardized nature of petroleum products, the relative inelasticity of demand, the fluidity of movement from sources of production to points of distribution and consumption, and the integrated and Nation-wide business of many concerns in the industry, variation in the volume of production has immediate and sharp repercussions upon prices of these commodities in interstate commerce. S. Doc. 61, 70th Cong., 1st sess., p. 128, *et seq.*, "Report on Petroleum Industry." See also Bzeakey, Petroleum Investigation (1939), 170:

> "Discoveries of large pools, such as Seminole, Santa Fe Springs, or the famous East Texas field have disrupted the whole economic balance of the petroleum industry."

Another indication of the intimate relationship between the production of oil and interstate commerce is the fact that the various States which limit production request and make use of a monthly estimate of national demand published monthly by the Federal Bureau of Mines. Testifying on this matter before the Temporary National Economic Committee, Mr. Alfred G. White, chief economist, Petroleum Economics Division, Bureau of Mines, stated (vol. 7, pp. 341–342):

> "Obviously, any State agency that was considering any balance between production and consumption would have to have some idea of what the [national] demand would be. They had no method of getting it themselves and that is the service this forecast renders."

5. Wasteful practices in petroleum production permanently diminish and distort the flow of interstate commerce in petroleum, and constitutes among producers an unfair method of competition in interstate commerce. Such practices affect interstate commerce in competing fuels and the instrumentalities of such commerce: It has also been established that physical waste in the production and storage of petroleum necessarily and directly has a substantial and injurous effect upon interstate commerce and upon the interstate market price of petroleum and its prodncts. For not only in a large part of the volume of this commerce threatened by wasteful methods of production and storage, in that the ultimate recovery from fields where such practices are employed is drastically reduced, but petroleum wastefully produced in "flush," low-cost producing areas causes a diversion of interstate commerce in the interstate movement of oil from areas of higher-cost "stripper" wells, and from flush fields where such wasteful methods are not employed. Thus, waste in production constitutes, as well, an unfair method of competition in interstate commerce. Such competition leads to the abandonment of "stripper" wells, loss of petroleum such wells would otherwise have produced, and the elimination of interstate commerce in their products. Petroleum Investigation (1934), 404 et seq. Moreover, under conditions of excessive production of petroleum, fuel oil because of abnormally low, uneconomic, price, is used for heavy industrial fuel or as bunker oil, displacing coal. This results in damage not only to the coal industry but to the railroads, which must be ready to haul coal in the previous volume if the price rises and buyers shift their fuel needs back to coal. Energy Resources Report (1939), 229.

6. Interstate commerce is a cuase and a means of spreading wasteful practices: Because of the combination of geologic and legal factors which prevail generally in the production of petroleum, wasteful production practices by one producer compel similar action by other producers in the same field in order that they may recover their share of the oil See *Bandini Petroleum Co.* v. *Superior Court*, 284 U. S. 8, 16; *Champlin Refining Co.* v. *Corporation Commission*, 286 U. S. 210, 228. Such methods tend also to encourage wasteful practices in competing flush fields in other States, thus causing interstate commerce to be a cause and a means of spreading practices which result in a squandering of this all-important national resource.

7. The facilities of interstate commerce are dependent upon petroleum: The very facilities of interstate commerce are directly dependent upon petroleum for their continued usefulness. All agencies of transportation require the products of the petroleum industry for lubrication and all automobiles, trucks, busses, airplanes, and an increasing proportion of railroads and a large proportion of ships are dependent on petroleum products for fuel. About 60 percent of the principal energy for transportation is derived from gasoline and fuel oil. Frey, The National Interest in Petroleum, speech before A. I. M. M. E. (1940). Therefore, a shortage or increase in the cost of petroleum products caused by a premature exhaustion of supplies of petroleum due to losses resulting from wasteful practices would drastically affect the cost of transportation in interstate commerce and would endanger the continued usefulness of many of its facilities. Energy Resources Report (1939) 124.

8. The States are unable separately to act effectively to curb wasteful practices in the production of petroleum: Evidence of the interstate character of the problem of petroleum production is provided by the ineffectiveness of individual State

action. The States which voluntarily restrict production from their flush pools have no recourse against other States which permit their flush pools to produce at an excessive rate. Occasionally the problem is emphasized in a pool which stretches across States Lines, such as the Rodessa field, which extends into Louisiana, Arkansas, and Texas. If one State should permit withdrawal of petroleum at a wasteful rate, thereby reducing bottom-hole pressure in its part of the field, petroleum from the parts of the field in other States where proper oil-gas production ratios had maintained the pressure would flow to the low pressure area created in the wasteful State. The resulting loss by the conservative State to the more reckless one which would ensue has tended to caues the nost inefficient standard of the three to become the common standard. See Ely, The Conservation of Oil, 51 Harv. L. Rev. 1209, 1221–1222 (1938).

Recognizing their inability to deal individually with a problem which disregards State lines, a number of the important oil-producing States formed, under Federal sanction, the so-called "Interstate Oil Compact of 1935," in an effort to accomplish by joint action what could not be accomplished by the States individually. But the compact, instead of solving the problem, has served only to dramatize the failure of such attempted cooperative action because of the competing economic interests of the States. Some of the important producing States such as Louisiana and California have not joined; Illinois, a member, has refused to enact a conservation law and her current uncontrolled, wasteful, production threatens a new crisis in the entire industry. Testimony has been received by this committee which has shown that the unrestrained production in Illinois has resulted also in the loss by Kansas, Oklahoma, and other Mid-continent producing areas of interstate markets which they had formerly supplied, thus causing substantial diversion of interstate commerce. And see statement to this effect in Bureau of Mines Forecast of Demand for Motor Fuel and Crude Oil, April 1940.

But limited, cooperative action could not be expected to solve a problem national in effect and national in importance. The States could not be expected to take an objective, over-all view of the national welfare, for they are competitors and they depend for a large part of their revenues upon taxes derived from petroleum. Moreover, the States which consume most of the petroleum and are, accordingly, most interested in the maintenance of an adequate supply at a reasonable cost for the longest possible period of time, not being producers, have no representation on the Compact Commission. They must be content with the decisions of the producing States. See T. N. E. C. hearings (1939), vol. 6, p. 205, and Colonel Thompson's testimony before the T. N. E. C., particularly at p. 473 et seq.

C. *Under the decisions of the Supreme Court the regulative porvisions of H. R. 7372 are a valid exercise of the commerce power.*—The general proposition that Congress, under the commerce clause, may regulate local productive activities which closely and substantially affect interstate commerce, is clear. See supra, pages 2–6. Thus, the only constitutional question raised by the proposed legislation is whether the effect upon interstate commerce of waste in the production and storage of petroleum is sufficiently close and substantial to justify Federal regulation. The Supreme Court, in deciding this question, accords great deference to the judgment of Congress regarding contemporary economic problems and their organic relationship to interstate commerce. *Chicago Board of Trade* v. *Olsen*, 262 U. S. 1. This attitude was well expressed in *Stafford* v. *Wallace*, 258 U. S. 495, in which case Mr. Chief Justice Taft said (p. 521):

> "* * * Whatever amounts to more or less constant practice, and threatens to obstruct or unduly to burden the freedom of interstate commerce is within the regulatory power of Congress under the commerce clause, and it is primarily for Congress to consider and decide the fact of the danger and meet it. This court will certainly not substitute its judgment for that of Congress in such a matter unless the relation of the subject to interstate commerce and its effect upon it are clearly nonexistent."

In determining whether "the relation of the subject to interstate commerce and its effect upon it are clearly nonexistent," the Supreme Court in the *Labor Board cases* declined to shut its eyes to the plainest facts of our national life and to deal with the question in an intellectual vacuum." Mr. Chief Justice Hughes in *N. L. R. B.* v. *Jones & Laughlin*, 301 U. S. 1, 41. He continued:

> "* * * Because there may be but indirect and remote effects upon interstate commerce in connection with a host of local enterprises throughout the country, it does not follow that other industrial activities do not have such a close and intimate relation to interstate commerce as to make

> the presence of industrial strife a matter of the most urgent national concern. * * * We have often said that interstate commerce itself is a practical conception. It is equally true that interferences with that commerce must be appraised by a judgment that does not ignore actual experience."

In the *Jones & Laughlin case*, the court upheld the validity of Federal regulation of the labor practices of a manufacturing concern on the ground that a stoppage of its operations because of industrial strife would directly and substantially affect interstate commerce. And in *Santa Cruz Fruit Packing Co.* v. *N. L. R. B.*, 303 U. S. 453, Federal control of the labor relations of a small canning business which shipped in interstate commerce less than 40 percent of its pack, an insignificant portion of the country's canned goods supplies, all of which was grown within the State, was upheld on the ground that there was a direct and substantial relation between the company's labor practices and interstate commerce in the company's products, in that a strike would cause a cessation of the shipment of the company's products in interstate commerce.

Obviously, the chain of causation producing the effect upon interstate commerce which justifies Federal regulation of the production of petroleum is shorter and therefore more direct than the chain of causation which was held sufficiently direct, in the *Labor Board cases, supra*, to justify Federal regulation of labor relations. In the *Labor Board cases*, three steps intervened between labor relations, the activity regulated, and interstate commerce: (1) Unsatisfactory labor relations might cause strikes, which (2) might retard the production of commodities, which (3) flow in or affect interstate commerce. Here the causation is immediate: (1) Wasteful methods and practices in the production of petroleum, the activity regulated, affect cost, volume, and channels of movement of petroleum in interstate commerce.

The evidence before this committee has shown that the effect upon interstate commerce of wasteful practices in the production of petroleum is much greater than, for example, the effect of a strike in the Santa Cruz Fruit Packing plant. The test of permissible application of Federal regulation, under the National Labor Relations Act, of labor relations in productive industries is whether "stoppage * * * of operations" by strikes in such enterprises would result in the substantial interruption or diminution of the flow of commodities in commerce. The determination of whether a particular regulation meets this test depends upon the facts with respect to the activity regulated. The facts with regard to the production of oil indicate clearly that the test is met by the proposed legislation. The proposed legislation would protect the Nation's oil fields from destruction or premature exhaustion through the dissipation of the reservoir energy due to the employment of wasteful methods of production. The amount of petroleum ultimately available for shipment in interstate commerce would thereby be greatly increased. If Congress has the power to protect commerce from diminution in volume because of strikes where the volume temporarily lost can be made up after the strike is ended and operations resumed, Congress must have the power to curb wasteful production which permanently and irrevocably diminishes the volume of that commerce by reducing the ultimate yield of the oil fields wastefully operated and by causing the permanent abandonment of high-cost "stripper" wells.

Before the *Labor Board* decisions, the Supreme Court had held in cases involving the Sherman Antitrust Act that local activity with respect to the production of goods may impose such a burden on interstate commerce as to justify Federal regulation. *United Mine Workers* v. *Coronado Coal Co.*, 259 U. S. 344, and *Coronado Coal Co.* v. *United Mine Workers*, 268 U. S. 295, were actions against a labor union and its officers for conspiring to restrain the shipment of plaintiff's coal in interstate commerce. It was charged that the restraint had been effected by destruction of mining properties having a potential output of 5,000 tons a day. In view of all of the coal produced in the country, cessation of operations in this field would affect only a small proportion of interstate commerce in the commodity. In the first *Coronado case* it was held that the evidence did not show an intent to impede interstate commerce and consequently that the Sherman Antitrust Act was inapplicable. The Court said, however, that (259 U. S. 344, 408):

> "* * * It is clear * * * that if Congress deems certain recurring practices, though not really part of interstate commerce, likely to obstruct, restrain or burden it, it has the power to subject them to national supervision and restraint. * * *"

And in the *Second Coronado case*, evidence was presented which indicated that there had been an intent to affect interstate commerce by causing cessation of the shipment of coal. The Court thereupon held the Sherman Act applicable and, as so applied, valid, on the ground that Congress could protect interstate commerce from local activity intended to stop the production of coal, which if produced, would have entered interstate commerce. And the Court has held actual intent to affect interstate commerce unnecessary to justify Federal intervention where Congress has declared that the practices regulated necessarily have such an effect. *Stafford* v. *Wallace*, 258 U. S. 495, 520–521; *Chicago Board of Trade* v. *Olsen*, 262 U. S. 1, 39–40.

Excessive surpluses of oil created by wasteful methods of production divert the flow of commerce in that commodity from the output of higher-cost but valuable "stripper" wells and efficiently operated "flush" wells to the output of lower-cost (from the short-term point of view), wastefully operated "flush" wells. This diversion of commerce from one area to another and from one State to another is analogous in its effect upon interstate commerce to the diversion which results when local acts cause a commodity to be consigned in interstate commerce or to be withheld from such commerce. The constitutionality of Federal regulations designed to protect interstate commerce from this effect was upheld in *Chicago Board of Trade* v. *Olsen*, 262 U. S. 1, 38–40. See also *United States* v. *Patten*, 226 U. S. 525. In the *Olsen case*, local sales on the Chicago Board of Trade were held subject to Federal control under the commerce clause on the ground that (262 U. S. 1, 39–40):

> "* * * If a corner and the enhancement of prices produced by buying futures directly burden interstate commerce in the article whose price is enhanced [*United States* v. *Patten*, 226 U. S. 525], it would seem to follow that manipulations of futures which unduly depress prices of grain in interstate commerce and directly influence consignment in that commerce are equally direct. The question of price dominates trade between the States. Sales of an article which affect the country-wide price of the article directly affect the country-wide commerce in it. * * *"

Since Congress can regulate local sales which affect the price and thereby the country-wide commerce in grain, Congress would seem necessarily to have the power to regulate and prevent waste in the production of petroleum which affects the country-wide price of that commodity and diverts the normal course of interstate commerce therein.

The Packers and Stockyards Act of 1921 (42 Stat. 159), under which the Secretary of Agriculture was vested with wide powers to supervise the charges and practices of packers and stockyardsmen, notwithstanding the fact that many intrinsically local matters were thereby subjected to Federal control, was upheld in *Stafford* v. *Wallace*, 258 U. S. 495, and *Tagg Bros. & Moorhead* v. *United States*, 280 U. S. 420. The charges made by commission men, dealers, and traders for their services in buying, selling, and handling cattle, sheep, and hogs in a stockyard can hardly be said to burden or affect interstate commerce more than do wasteful practices in the production of petroleum which affect the volume and price of oil and the whole course of movement of that commodity in interstate commerce.

Moreover, competition of low-priced wastefully produced petroleum diverts trade from producers who are unwilling to squander their flush production as well as from "stripper" well areas. The diversion of commerce thus caused by the low prices resulting from wasteful production may, and often does, cause the abandonment and permanent loss of the "stripper" wells. Congress has exercised the power to control competition in or affecting interstate commerce since the adoption of the Sherman Act in 1890, and again through the Clayton Act, the Federal Trade Commission Act, and, more recently, the Fair Labor Standards Act of 1937. And the power of Congress to restrain and regulate local activity affecting competition in interstate commerce has frequently been sustained. *Federal Trade Commission* v. *Winsted Hosiery Co.*, 258 U. S. 483; *Federal Trade Commission* v. *Pacific States Paper Trade Ass'n*, 273 U. S. 52; *Federal Trade Commission* v. *R. F. Keppel & Bro., Inc.*, 291 U. S. 304. It would seem manifest that Congress can protect producers of petroleum for interstate commerce against unfair methods of competition if it can protect fair sellers against unfair methods of selling, for in both situations the choice must be made between protecting the fair producer or seller or abandoning so much of the field of interstate commerce to the unfair producer or seller as he can supply.

Not only does waste in the production and storage of oil affect the volume, channels, and prices in interstate commerce but it imperils the full and continued usefulness of the instrumentalities of that commerce. The absolute dependence of these agencies upon petroleum has been shown. That the preservation of an adequate and inexpensive supply of petroleum is essential to their effective maintenance and economical operation is also established. The recent case of *Consolidated Edison Co.* v. *N. L. R. B.*, 305 U. S. 197, is directly in point here. In that case a producer and distributor of electric power, engaged solely in intrastate activities, was held subject to Federal control and regulation under the commerce clause because its product had a direct and substantial effect upon interstate commerce in that many interstate commerce facilities serving New York City were directly dependent upon the company for power. The Court found that an interruption of the flow of power to these facilities would be catastrophic. Said the court (305 U. S. 197, 221–222):

> "If industrial strife due to unfair labor practices actually brought about such a catastrophe, we suppose that no one would question the authority of the Federal Government to intervene in order to facilitate the settlement of the dispute and the resumption of the essential service to interstate and foreign commerce. But it cannot be maintained that the exertion of Federal power must await the disruption of that commerce. Congress was entitled to provide reasonable preventive measures and that was the object of the National Labor Relations Act."

It can hardly be questioned that petroleum is as vital to interstate transportation as is electric power. Without oil interstate commerce as we know it today would cease almost entirely and the cessation would be permanent, not temporary as would have been the case in the event of a strike in the Consolidated Edison plant. Moreover, the effect would be Nation-wide, not confined to a particular locality. Certainly, therefore, it cannot be maintained that the exertion of Federal power must await the disruption of interstate commerce by the exhaustion of oil. It would then be too late for effective Federal intervention. Much more essential to interstate commerce, accordingly, are the "reasonable preventive measures" such as are contained in H. R. 7372, which "Congress is entitled to provide" under the commerce clause.[3]

The Supreme Court has frequently held that Congress is not divested of its power to regulate interstate activity because the regulation, to be effective, must also apply to intermingled and inseparable intrastate activities. *Minnesota Rate cases*, 230 U. S. 352; *Houston E. & W. Texas Ry.* v. *United States*, 234 U. S. 342. As was held in *Currin* v. *Wallace*, 306 U. S. 1:

> "* * * The fact that intrastate and interstate transactions are commingled on the tobacco market does not frustrate or restrict the congressional power to protect and control what is committed to its own care. As we said in the *Shreveport case*, 234 U. S. 342, 351, 352, with respect to the intrastate rates of interstate carriers—'Wherever the interstate and intrastate transactions of carriers are so related that the government of the one involves the control of the other, it is Congress, and not the State, that is entitled to prescribe the final and dominant rule, for otherwise Congress would be denied the exercise of its constitutional authority and the State, and not the Nation, would be supreme within the national field.' See, also, *Minnesota Rate cases*, 230 U. S. 352, 399; *Wisconsin Railroad Commission* v. *Chicago B. & Q. R. Co.*, 257 U. S. 563, 588; *Stafford* v. *Wallace* 258 U. S. 495, at p. 522."

Since interstate and intrastate production of petroleum from flush fields is inextricably intermingled and interdependent, Federal regulation "to be effective, must, and therefore may constitutionally, apply to all" production from those fields. *Mulford* v. *Smith*, 307 U. S. 38; *United States* v. *Rock Royal Cooperative, Inc.*, 307 U. S. 533.

It has been shown that, even regarded as a local, intrastate activity, the production of petroleum directly and substantially affects interstate commerce and consequently is subject to Federal regulation under the commerce clause. But the production of petroleum has another aspect. In a real sense it is a business or trade consisting of the production of petroleum for sale, transportation, processing, and marketing. It is a business which, moreover, is part and parcel of a great Nation-wide industry. Production, therefore, is business as well as mining, and because of the manner in which the petroleum industry actually is organized, a company engaged in the business of producing and selling petroleum is not merely engaged in commerce, but in commerce which is an integral part of a regular, established course of business on an interstate or national scale. In *United States* v. *Wilshire Oil Co.*, 9 F. Supp. 396, 401, the Court, recognizing the validity of this argument, stated that:

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[3] See also *Colorado* v. *United States*, 271 U. S. 153 (Congress may regulate purely intrastate activities of an interstate carrier if such activities prejudice the carrier's ability to serve interstate commerce efficiently); *Virginian Ry.* v. *System Federation No. 40*, 300 U. S. 515 ("back shop" employees of railroad subject to Federal regulation because they are essential to proper maintenance of interstate transportation).

> "One has but to superficially note the indispensability of petroleum products in national security and transportation to appreciate the magnitude and singular situation in the United States of the oil industry. * * * This industry is sui generis. It is so necessarily interrelated with and among all of the States that, regardless of where any crude oil production instrumentality of it may be physically located, the business is of itself national in scope and effect. Although less than a score of the States furnish all of the domestic production of crude oil, the market for this peculiar commodity and its products is not only Nation-wide, but extends to our Territories and insular possessions as well, and even to foreign lands.
>
> "It seems to me that such a wide stream of commerce as the petroleum industry can be successfully protected only by regulating its flow at the source; and while it may be held that the producing well, when viewed apart from its corelative facilities, is intrastate, nevertheless when the industry is considered the well occupies no such local or restricted channel."

The Supreme Court has said that "commerce among the States is not a technical legal conception, but a practical one, drawn from the course of business." *Swift and Co.* v. *United States*, 196 U. S. 375, 398. And in *Stafford* v. *Wallace*, 258 U. S. 495, the court recognized that the increasing interrelation of commercial activities in an expanding economy involved proportionate enlargement of the scope of the commerce clause. The Court stated that (pp. 518–519):

> "The application of the commerce clause of the Constitution in the *Swift case* was the result of the natural development of interstate commerce under modern conditions. It was the inevitable recognition of the great central fact that such streams of commerce from one part of the country to another which are ever flowing are in their very essence the commerce among the States and with foreign nations which historically it was one of the chief purposes of the Constitution to bring under national protection and control. This court declined to defeat this purpose in respect of such a stream and take it out of complete national regulation by a nice and technical inquiry into the noninterstate character of some of its necessary incidents and facilities when considered alone and without reference to their association with the movement of which they were an essential but subordinate part.
>
> "The principles of the *Swift case* have become a fixed rule of this court in the construction and application of the commerce clause. * * *"

Most of the petroleum business today is done by large, integrated companies. In a continuous interstate operation these companies draw petroleum from the producing fields into great interstate pipe lines, pass it through refineries and then on to countless points of distribution throughout all 48 States. The various component activities are interwoven into one unitized, interstate, commercial operation. Production is so inseparably merged into the whole commercial process that it cannot be realistically separated therefrom. The words of Mr. Chief Justice Hughes are directly in point here (*N. L. R. B.* v. *Jones & Laughlin*, 301 U. S. 1, 41):

> "* * * When industries organize themselves on a national scale, making their relation to interstate commerce the dominant factor in their activities, how can it be maintained that their industrial labor relations constitute a forbidden field into which Congress may not enter when it is necessary to protect interstate commerce from the paralyzing consequences of industrial war? We have often said that interstate commerce itself is a practical conception. It is equally true that interferences with that commerce must be appraised by a judgment that does not ignore actual experience."

This line of argument, mutatis mutandis, is particularly applicable to the petroleum industry. Since that industry is organized on a national scale, its relation to interstate commerce being the dominant factor in its far-flung activities, how can it be maintained that its production activities constitute a forbidden field into which Congress may not enter when it is necessary to protect interstate commerce from the pervasive, paralyzing consequences of wasteful production?

Not only does the structural organization of the petroleum industry defeat effective local control but the individual States are impotent to prevent the destruction or impairment of their oil fields and the loss of their share of the interstate market caused by the effect of competition of wastefully produced petroleum from other States. The commerce clause was intended by the framers of the Constitution to enable the Federal Government to control the economic activities of the Nation with which the States separately were powerless to deal—those activities which concern more States than one. See Stern, That Commerce Which Concerns More States Than One (1934), 47 Harvard Law Review, 1335; Powell, The Scope of the Commerce Power in Essays on the Law and Practice of Governmental Regulation (1935) 197. Mr. Stern's essay shows that the Supreme Court has consistently, throughout its entire history, adjudged the validity of Federal regulation under the commerce clause on this principle. As the Court pointed out in the *Minnesota Rate cases*, 230 U. S. 352, 398:

> "* * * The words 'among the several States' distinguish between the commerce which concerns more States than one and that commerce which is confined within one State and does not affect other States. 'The genius and character of the whole Government' said Chief Justice Marshall [*Gibbons* v. *Ogden*, 9 Wheat. 1, 195] 'seem to be, that its action is to be applied to all the external concerns of the Nation, and to those internal concerns which affect the States generally; but not to those which are completely within a particular State, which do not affect other States, and with which it is not necessary to interfere, for the purpose of executing some of the general powers of the Government."

Consequently, since the Federal regulation contemplated in H. R. 7372 would protect the States from the adverse effects of an economic situation beyond their control and would, at the same time, foster and protect interstate commerce, the bill is manifestly a valid exercise of the commerce power.

Hammer v. *Dagenhart*, 247 U. S. 251, has no application to legislation such as is here proposed. In that case, by a 5 to 4 decision, an act of Congress forbidding the shipment in interstate commerce of the products of child labor was held unconstitutional on the ground that it was not a regulation of interstate commerce, but was enacted solely to control local social policy with respect to child labor. The proposed legislation is fundamentally different from the child labor law. In *Hammer* v. *Dagenhart* the Court found that the evil sought to be regulated was a part of the productive process with no apparent relation to or effect upon the movement of goods; seemingly, the volume of interstate commerce would be unaffected by the age of the laborer.[4] But in this case if the legislation is enacted, the regulation is designed to remove a serious existing obstruction and burden upon interstate commerce, as would be made evident by the findings of Congress set forth in section 2 (a) of the proposed "Petroleum Conservation Act of 1939." And not only would Congress find that waste in the production of oil directly burdens interstate commerce, but the finding would be based upon elaborate hearings which have established the factual accuracy of this legislative declaration. Any doubt concerning this question would seem to have been removed by the decisioni n *United States* v. *Powers*, 307 U. S. 214, in which the court incidentally passed upon the validity of the Connally "Hot Oil" Act (49 Stat. 30) as an exercise of the commerce power. The Court said (p. 216):

> "* * * This is an act designed to protect interstate and foreign commerce from the diversion and obstruction of, and the burden and harmful effect upon, such commerce caused by contraband oil (as defined in the act), and to encourage the conservation of deposits of crude oil within the United States."

Moreover, subsequent decisions of the Supreme Court indicate that the Court has tacitly receded from the position taken in *Hammer* v. *Dagenhart*. See *N. L. R. B.* v. *Jones & Laughlin*, 301 U. S. 1; *Mulford* v. *Smith*, 307 U. S. 38; *United States* v. *Rock Royal Cooperative, Inc.*, 307 U. S. 553; *United States* v. *Hill*, 248 U. S. 420; *Brooks* v. *United States*, 267 U. S. 432; *Whitfield* v. *Ohio*, 297 U. S. 431.

In *Mulford* v. *Smith*, 307 U. S. 38, the provisions of title III of the Agricultural Marketing Adjustment Act of 1938 providing for marketing quotas for tobacco were held to be a valid regulation of interstate commerce although the act is, by its terms, designed to reduce the production of "abnormally excessive supplies" which adversely affect interstate commerce. The theory of the act is that if tobacco cannot be marketed except as a loss it will not be produced and therefore by penalizing the amount marketed in excess of a production quota fixed by the Secretary of Agriculture production will be held to such quota. Notwithstanding the obvious purpose and effect of the act, the Court stated that the act did not "purport" to be a regulation of production, but "purports" to be a regulation of interstate commerce, and that:

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[4] From the start the case has been strongly criticized. See Corwin, Congress's Power to Prohibit Commerce (1933), 18 Cornell L. Q. 477; Cushman, The National Police Power under the Commerce Clause of the Constitution (1919), 3 Minn. L. Rev. 452; Powell, The Child Labor Law, the Tenth Amendment and the Commerce Clause (1918), 3 Southern L. Quar. 175; Bikle, *The Commerce Power and Hammer* v. *Dagenhart*, 67 U. of Pa. L. Rev. 21.

> "* * * Any rule, such as that in the act, which is intended to foster, protect and conserve that commerce, or to prevent the flow of commerce from working harm to the people of the Nation, is within the competence of Congress. Within these limits the exercise of the power, the grant being unlimited in its terms, may lawfully extend to the absolute prohibition of such commerce, and *a fortiori* to limitation of the amount of a given commodity which may be transported in such commerce. *The motive of Congress in exerting the power is irrelevant to the validity of the legislation.*" [Italics supplied.]

Thus, in fact, the Court held that the Federal Government can regulate not only the amount of a commodity shipped in interstate commerce but the total amount produced within each State. It can hardly be questioned that the wasteful production of petroleum under the circumstances which have been shown to exist has a more direct and substantial effect upon interstate commerce than the overproduction of tobacco. Moreover, tobacco produced in excess of the demand as represented by the marketing quota does not represent an irreplaceable loss to the Nation for more can be grown. Consequently, the sanctions which are practicable and effective in the case of agricultural produce do not lend themselves to the control of the production of oil, though each type of production has a similar effect upon interstate commerce. It seems clear, therefore, that the Court will not reject the statute here proposed because of the necessarily different nature of the sanction employed when, realistically, it has a similar effect upon local activities. In fact, the regulation is less severe since as much oil can be produced and marketed as proper methods of operation will yield. It would seem that the Court will recognize that the direct prohibition of wasteful production is merely a device, in the interest of conserving a vital national resource, for making effective at an earlier stage the protection of interstate commerce from the adverse effects of oil wastefully produced.

Significantly, in the *Mulford case*, the majority opinion made no attempt to distinguish *Hammer* v. *Dagenhart*, and that the case was in effect overruled was made clear by the dissenting opinion of Mr. Justice Butler. However, any remaining doubts on that score were removed by *United States* v. *Rock Royal Cooperative, Inc.*, 307 U. S. 533, which sustained the price-fixing provisions of the Agricultural Adjustment Act of 1938 with respect to milk. In that case Congress was held to have the power to regulate the price of milk sold by a local dairy farmer, as part of a general plan for protecting interstate commerce in the commodity from the interferences, burdens, and obstructions arising from excessive surpluses and the social and sanitary evils created by low prices resulting from such surpluses. The Court stated (307 U. S. 533, 569):

> "* * * Activities conducted within state lines do not by this fact alone escape the sweep of the commerce clause. [*Currin* v. *Wallace*, 306 U. S. 1] Interstate Commerce may be dependent upon them. [*Consolidated Edison Co.* v. *National Labor Relations Board*, 305 U. S. 197, 220] Power to establish quotas for interstate marketing gives power to name quotas for that which is to be left within the state of production. [*Mulford* v. *Smith*, 307 U. S. 38] Where local and foreign milk alike are drawn into a general plan for protecting the interstate commerce in the commodity from the interferences, burdens and obstructions, arising from excessive surplus and the social and sanitary evils of low values, the power of Congress extends also to the local sales."

Even before the *Mulford* and *Rock Royal Cooperative cases* Congress had indicated that it believed that either the *Dagenhart case* had been overruled sub silentio by subsequent cases or that it would be overruled if a similar case should be presented to the Court. This is apparent from the enactment of the Fair Labor Standards Act of 1938 (52 Stat. 1060), which, admittedly, is inconsistent in large part with the principles announced in the *Dagenhart case.* See Joint

Hearings before Senate Committee on Education and Labor and House Committee on Labor on "Fair Labor Standards Act of 1937," 75th Cong., 1st sess. (1937), 4-8.

Opponents of the proposed legislation have emphasized the fact that Mr. Charles Evans Hughes, as counsel for the American Petroleum Institute, at a public hearing on May 27, 1926, before the Federal Oil Conservation Board, argued that the commerce clause did not furnish an adequate constitutional basis for Federal control of the production of petroleum. Mr. Hughes, speaking as an advocate for a client opposing Federal regulation, contended that "production is not commerce and the production of petroleum within a state is not interstate commerce" and that local productive activities were beyond the scope of the commerce clause. But it is overlooked that Mr. Hughes, as Chief Justice, speaking for the Supreme Court in cases involving analogous situations has repudiated this argument and has rejected, as inapposite, the cases upon which it was based. *N. L. R. B.* v. *Jones & Laughlin*, 301 U. S. 1; *Santa Cruz Fruit Packing Co.* v. *N. L. R. B.*, 303 U. S. 453.

II. THE PROPOSED "PETROLEUM CONSERVATION ACT OF 1939," IF ENACTED, WOULD BE A VALID EXERCISE OF THE WAR POWERS

Whether or not the enactment of the proposed legislation would be a valid exercise of the power of Congress to regulate interstate commerce, and even if Congress had no power to regulate interstate commerce at all, it would still have ample authority now to enact this legislation under its "war powers." These are the specifically granted powers "to declare war" (art. 1, sec. 8, clause 11), "to raise and support armies" (art. 1, sec. 8, clause 12), "to provide and maintain a navy" (art. 1, sec. 8, clause 13), and "to make all laws which shall be necessary and proper for carrying into execution the foregoing powers" (art. 1, sec. 8, clause 18). It is too well settled for argument that the exercise of these powers by Congress is not limited to periods of actual conflict. *United States* v. *Gettysburg Electric Ry.*, 160 U. S. 668; *United States* v. *MacIntosh*, 283 U. S. 605; *Ashwander* v. *Tennessee Valley Authority*, 297 U. S. 288; Warren, The Making of the Constitution (1937) 483. The power to declare war carries with it the power to wage war as effectively as possible. As Mr. Justice Van Devanter said in *United States* v. *MacIntosh*, 283 U. S. 605, 622:

> "* * * Peace is a sweet and holy thing, and war is a hateful and abominable thing to be avoided by any sacrifice or concession that a free people can make. But thus far mankind has been unable to devise any method of indefinitely prolonging the one or of entirely abolishing the other; and, unfortunately, there is nothing which seems to afford positive ground for thinking that the near future will witness the beginning of the reign of perpetual peace for which good men and women everywhere never cease to pray. The Constitution, therefore, wisely contemplating the ever-present possibility of war, declares that one of its purposes is to 'provide for the common defense.' In express terms Congress is empowered 'to declare war,' which necessarily connotes the plenary power to wage war with all the force necessary to make it effective * * *."

To wage war effectively obviously requires that the Nation be prepared for hostilities and, in the nature of things, this preparation must be undertaken before a conflict becomes imminent, certainly before the outbreak of war.

The Supreme Court has frequently indicated that the war powers are of such great importance to the continued existence of the Nation that as to them Congress has a wider authority and a freer discretion than with respect to its other powers. See, e. g., the following statements by the Court:

> "From its very nature, the war power, when necessity calls for its exercise, tolerates no qualifications or limitations, unless found in the Constitution or in applicable principles of international law." *United States* v. *MacIntosh*, 283 U. S. 605, 622.
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> "* * * To Congress in the exercise of its powers, not least the war power upon which the very life of the Nation depends, a wide latitude of discretion must be accorded * * *." *Hamilton* v. *Kentucky Distilleries Co.*, 251 U. S. 146, 163.

There is to be found in the Constitution no qualification or limitation upon the time when national defense measures enacted under the war powers may be initiated nor during which they may be continued, no limitation upon the number of ships which may be built, the size or equipment of the army, or the quantity of supplies which may be procured and stored against an emergency. Nor is there any limitation as to the number of attacks against which the Nation may prepare itself, nor as to the duration of these wars, nor as to the date of their outbreak. Instead, the Constitution, by delegating to Congress the power to enact all laws which may be necessary and proper to the execution of the war powers, leaves to the sound judgment of the legislative branch of the Government the decision as to the measures needed at any particular time to provide for the national defense. *United States* v. *MacIntosh*, 283 U. S. 605; *Hamilton* v. *Kentucky Distilleries Co.*, 251 U. S. 146; *Northern Pacific Ry.* v. *North Dakota*, 250 U. S. 135; *Highland* v. *Russell Car Co.*, 279 U. S. 253; *McKinley* v. *United States*, 249 U. S. 397.

Clearly, therefore, under the war powers Congress has a broad discretion with respect to the Army and Navy. Thousands of airplanes, for example, are added yearly to these forces with the expectation that they will become obsolete before necessity calls for their use. And the size and composition of the Army and Navy are the subject of frequent enactments by Congress in response to contemporary world conditions. In the exercise of this discretion Congress has provided a mechanized army, an air force, and a navy which are absolutely dependent upon an adequate supply of petroleum, in the form of fuels and lubricants, for their effective functioning. As one writer has put it:

> "Not a fighting ship of the Navy can leave its moorings without the use of petroleum; not a tank take its place in the line; not an airplane leave the ground; not a truck move, or a submarine pursue its course, without petroleum." Williams, Direct Federal Control of Petroleum Production, 21 American Bar Ass'n Journal (1935) 309, 310.

Admiral Stuart, Director of the Naval Petroleum Reserves, stated before this committee that:

> "The importance of petroleum and its products as necessaries of modern warfare can no longer be denied and those departments of the Government charged with the defense of the United States must be assured of ample supplies of these vital materials if they are to be able at all times to carry out their missions." Petroleum Investigation (1939) 441.

It is, therefore, clearly of the highest concern to Congress, as guardian of the Nation's safety, that an adequate and readily available supply of petroleum be at hand. In order that the supply be certain, it must be located within the boundaries of the United States not only to avoid the hazards of wartime transportation but to avoid dependency upon foreign powers for the petroleum itself. In view of the normal peacetime requirements of 1¼ billion barrels yearly, which would skyrocket in case of active warfare, it is clear that the supply must be large. Petroleum Investigation (1939) 167, 441. Furthermore, in these days of economic warfare, a most important factor would be the cost of the commodity. It would be greatly in the interest of national security that the supply be available at a reasonable price.[5]

The continued existence of domestic reserves from which adequate supplies of petroleum can be obtained at reasonable prices is therefore clearly in the interest of the national defense. And in view of the complexities of the problem of providing this reserve it is clear that the field of congressional discretion is equally as broad as that which it has concerning the composition and equipment of the Army and Navy. In enacting the proposed legislation Congress would exercise its discretion as to the best manner in which to make provision for such reserves by conserving the petroleum resources of the Nation through the prevention of wasteful methods and practices of production, thereby extending the life of the wells and increasing the ultimate recovery from the reservoirs.

It has been urged that the proposed legislation is not a valid exercise of the war powers because, granting that the Federal Government can make provision for adequate supplies of petroleum in the interest of national defense, it can do so only by purchase and not by regulation. The control of production, it is contended, is a matter for local regulation under the State police power and consequently beyond the scope of Federal control.

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[5] It has been suggested that when the Nation's reserves of petroleum are exhausted, oil made from coal and shale will provide an adequate substitute. But this disregards a most important point: the enormous capital outlay which would be required for plants and equipment and the additional cost of the product. The average estimate of the cost of such fuel and lubricants is about 3 times that of the same products from natural petroleum at present prices. Petroleum Investigation (1939) 277 et seq. Since the price now paid for motor fuel (at the refinery) is approximately 1½ billion dollars a year, the added yearly cost to the Nation for this item alone would be 3 billion dollars. In wartime, with mounting consumption and production costs, the added economic burden would be even more staggering. Frey, The National Interest in Petroleum (1940) (speech before the A. I. M. M. E.. New York meeting, February 1940).

Another argument, basically similar to the one just stated, which also has been urged against the validity of the proposed legislation as an exercise of the war powers is that if the war powers authorized such legislation they would authorize an almost complete centralization of power in the Federal Government. It is contended that modern war is so vast and touches so many aspects of modern life that if congressional power extended to the regulation of all things which would be useful in time of war, Congress could deprive the States of practically all power by enacting legislation reciting the war powers as justification for Federal control. Thus, the argument proceeds, Congress could take over all functions of the States with respect to the production of foods, clothing, iron, coal, etc. But, the argument concludes, common sense dictates that the war power was not intended by the framers to break down completely the carefully devised constitutional system of dual government and consequently that the war power is not available here as a basis for Federal regulation of the production of petroleum.

The basic problem presented by each of the above objections is the right of the Federal Government, by regulation, to prevent the waste of our petroleum resources. In each of the arguments it is contended that such control lies solely within the police power of the States and not within the power of the Federal Government.

Let us consider the validity of these arguments.

For the purposes of this memorandum it may freely be conceded that Congress has no such vast power that during times of peace it can deprive the States of their regulatory powers with respect to all productive activities. How far the Congress may go under the war powers beyond the lines already blocked out by the decided cases it is not necessary to consider because it is clear that this particular legislation would be well within the limits to which the Supreme Court has indicated Congress can go. The Supreme Court, speaking through Mr. Chief Justice Hughes, might well have been answering this very argument when, in *Santa Cruz Fruit Packing Co.* v. *N. L. R. B.*, 303 U. S. 453, 467, in response to a similar argument with respect to the commerce power, it stated that:

> "* * * the criterion is necessarily one of degree and must be so defined. This does not satisfy those who seek for mathematical or rigid formulas. But such formulas are not provided by the great concepts of the Constitution such as 'interstate commerce,' 'due process,' 'equal protection.' In maintaining the balance of the constitutional grants and limitations, it is inevitable that we should define their applications in the gradual process of inclusion and exclusion.
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> "There is thus no point in the instant case in a demand for the drawing of a mathematical line. And what is reasonably clear in a particular application is not to be overborne by the simple and familiar dialectic of suggesting doubtful and extreme cases. * * *"

The constitutional grant of the war powers is not circumscribed by any limitation as to the time when they may be exercised by Congress. The Constitution does not say that armies can be raised and a navy provided in times of peace but the authority of Congress to do so, which has been exercised for more than 150 years, will hardly be disputed. Yet the grant of these powers is in similar language to the power to enact all laws which shall be necessary and proper for carrying them into effect. Consequently, that power also must be available in peacetime as well as in war. It has, moreover, been universally accepted that the war powers are continuing powers. Not only has the propriety of maintaining armed forces in times of peace been long recognized but the Supreme Court has sustained peacetime action by the Federal Government justified as an exercise of the war powers. *United States* v. *Gettysburg Electric Ry.*, 160 U. S. 668; *Ashwander* v. *Tennessee Valley Authority*, 297 U. S. 288; *United States* v. *MacIntosh*, 283 U. S. 605; see also *Hamilton* v. *Kentucky Distilleries Co.*, 251 U. S. 146.

The Supreme Court has held many times that the war power includes the power to regulate local activities where such regulation is necessary in the interest of the national defense. As was said in this precise connection by the Supreme Court in *Hamilton* v. *Kentucky Distilleries Co.*, 251 U. S. 146, 156, in considering the extent of the war power:

> "That the United States lacks the police power, and that this was reserved to the States by the tenth amendment, is true. But it is none the less true that when the United States exerts any of the powers conferred upon it by the Constitution, no valid objection can be based upon the fact that such exercise may be attended by the same incidents which attend the exercise by a State of its police power, or that it may tend to accomplish a similar purpose."

Thus in *McKinley* v. *United States*, 249 U. S. 397, a statute prohibiting the maintenance of brothels within a certain area surrounding military posts was held to be a valid exercise of the war powers. The brothel in question was located on privately owned land within the State of Georgia. Clearly, the State had authority under its police power to act in the circumstances; and usually questions of public morals are considered purely local matters. Yet the Court said (p. 399):

> "That Congress has the authority to raise and support armies and to make rules and regulations for the protection of the health and welfare of those composing them, is too well settled to require more than the statement of the proposition. *Selective Draft Law cases*, 245 U. S. 366.
>
> "Congress having adopted restrictions designed to guard and promote the health and efficiency of the men composing the Army, in a matter so obvious as that embodied in the statute under consideration, may leave details to the regulation of the head of an executive department, and punish those who violate the restrictions * * *."

And the Court upheld the right of the Federal Government during the World War to take over and operate the railroad and communications systems (*Northern Pacific Ry.* v. *North Dakota*, 250 U. S. 135; *Dakota Central Telephone Co.* v. *South Dakota*, 250 U. S. 163); to fix the price of coal even in sales between private parties (*Highland* v. *Russell Car Co.*, 279 U. S. 253); to determine to whom electric power was to be supplied (*International Paper Co.* v. *United States*, 282 U. S. 399); to enforce Nation-wide prohibition (*Hamilton* v. *Kentucky Distilleries Co.*, 251 U. S. 146); and even to regulate the purposes for which foodstuffs might be used (*Maresca* v. *United States*. 277 Fed. 729, *cert. den.* 257 U. S. 657).

The criterion established in the cases, and the only logical criterion as to the validity of legislation enacted under the war powers, is the existence of a rational factual connection between the regulation sought to be imposed and the promotion of the national defense. Thus, although the facts in times of peace may differ from those in wartime and, therefore, may exclude the exercise by the Federal Government of functions with respect to particular subject matters which would be proper in times of war, this does not negative the existence of the power in any particular case.

It has been conclusively shown that Congress may exercise its war powers in times of peace. It is equally well established that the war power includes the power to regulate local and private business. It follows, therefore, that the war power may be exercised to regulate local enterprise in times of peace as well as of war. But in each instance, whether in time of peace or war, the regulation must have reasonable relation to the proper protection and defense of our country in existing or future times of armed conflict. Whether that reasonable relation exists is a matter for the determination of the Congress, and the courts will allow the widest range of judgment to the Congress in making that determination. *Hamilton* v. *Kentucky Distilleries Co.*, 251 U. S. 146; *United States* v. *MacIntosh*, 283 U. S. 605.

Consequently the sole problem presented is whether the curtailment of waste of petroleum, as proposed in the pending bill, bears a reasonable relationship to the proper defense and protection of our country in possible future times of war. If it does, the bill is constitutional. And the determination of that relationship is to be made without reference to the possibility or impossibility of similar regulation in other fields. Whether iron or food or any other material can be regulated as a reasonable peacetime exercise of the war power is of no concern. The reasonableness of each suggested type of regulation or control must obviously be determined on its own peculiar facts.[6] And the authorities already discussed demonstrate that the Supreme Court recognizes that doctrine.

The vital importance of petroleum to the effective operation of the armed forces of the Nation has been shown. See supra, p. 30. There are, at present, known reserves of petroleum of about 18,000,000,000 barrels, including flush fields and fields of settled production. However, this amount cannot be recovered at once but only over a period of many years. The Energy Resources Report states that (p. 139): "The recovery of the crude [reserve] has to be spread over a period of many years. It is * * * likely that present reserves would be adequate for 4 or 5 years at roughly the current level * * *." Thus in order to provide, so far as possible, a reasonably sufficient supply of petroleum which would be readily available for the military machine and supporting civilian needs, against the possibility of war, it is manifest that the Federal Government must take some kind of action. The Government could, undoubtedly, expropriate reserves, but the existence of the power to do so does not in itself negative the existence of the power to proceed as is here proposed. The proposed legislation seeks to stretch out the period during which the petroleum resources of the Nation will continue adequate to meet the needs of an effective national defense by preventing wasteful methods in production. These hearings have established, beyond question that the proper enforcement of such legislation would, in fact extend this period substantially. Petroleum Investigation (1939). There is, therefore, clearly at this time a material and very direct relationship between the proposed legislation and an adequate national defense, and, therefore, the legislation would be a valid exercise of the war powers.

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[6] There are, in any event, substantial factual differences between petroleum and the other materials and resources to which opponents of the bill contend Federal regulation under the war powers would extend if the control of petroleum was within that power. Petroleum is an indispensable resource that is not only limited in quantity and irreplaceable but also is consumed by use. Foodstuffs, clothing, and the like, while consumed by use are composed of replenishable resources. Metals, such as iron and copper, yield scrap which can be used again. In comparison with the enormous known reserves of coal, the known reserves of petroleum are insignificant. Yet it should be emphasized that even with respect to these resources the war powers would provide an adequate constitutional basis for Federal regulation if the requisite factual relationship with respect to the national defense were found to exist.

The argument that Congress is empowered to conserve petroleum resources in the interest of national defense only by acquisition of petroleum properties obviously falls of its own weight in view of the demonstrated power of Congress to achieve conservation of petroleum and prevention of its waste by appropriate regulation under the war powers. Congress has the legal power to proceed in either way and may choose either or both. That choice, then, is the sole remaining problem. The method of conservation proposed in the bill seems eminently preferable for several reasons. Not only will it preserve our petroleum resources for use of the armed forces both in times of war and peace, but it also will preserve those resources for the benefit of the people as a whole. Furthermore, for the Government to acquire producing properties containing petroleum supplies adequate for the needs of the national defense would necessarily result in the closing in of producing fields to an extent that would cause a disruption in the petroleum industry which is so vital in our national economy (see supra, pp. 7–8).[7] Moreover, the Congress must consider the enormous direct cost to the Government for the reserves taken, the fact that the lands taken would be retired from local tax rolls and severance tax payments to the States would cease, that thousands of workers would be deprived of their livelihood, and that the price of petroleum products would almost certainly rise rapidly, affecting the cost of transportation, the great automobile industry, etc. The ramifications of any effective action which the Federal Government might take under its eminent domain power are then so adverse and so far reaching as to make it clearly a a matter of last resort.

It should be emphasized that, because of the comparatively small know reserves of petroleum estimated as adequate to meet present consumption only for a period of approximately 5 years, and because of the known wasteful methods of production which daily are depleting unnecessarily these reserves, it is essential that conservational practices be enforced immediately. If Congress is to enact legislation to conserve this vital resource it must be done at a time when the resource exists. The Congress cannot afford to wait for war; it must act now if it is to preserve petroleum for use of the armed forces and their supporting industry during time of military hostility. In this instance the exercise of the war power, to be effective, must be in times of peace.

As has been stated by the present Chief Justice of the Supreme Court:

> "The framers of the Constitution did not contrive a spectacle of impotency. One of the objects of 'a more perfect union' was 'to provide for the common defence.' A nation which could not fight would be powerless to secure 'the blessings of liberty to ourselves and our posterity.' Self-preservation is the first law of natural life and the Constitution itself provides the necessary powers in order to defend and preserve the United States. Otherwise, as Mr. Justice Story said: 'the country would be in danger of losing both its liberty and its sovereignty from the dread of investing the public councils with the power of defending it. It would be more willing to submit to foreign conquest

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[7] Obviously the acquisition of petroleum stores to meet future needs would necessitate the acquisition of entire producing fields containing enormous reserves. Large amounts of petroleum would be required and only producing fields provide known and calculable reserves. Entire fields would have to be taken and shut in, else the remaining producing wells would deplete the reserve. Also, it would be impossible merely to purchase petroleum for storage above ground. It could not be safely stored, or stored at all, in the quantities needed. The producing geologic formations alone provide adequate and safe storage.

than to domestic rule.'" [Hughes, War Powers Under the Constitution, 42 American Bar Association Reports (1917) 232.][8]

III. THE PROPOSED PETROLEUM CONSERVATION ACT OF 1939, IF ENACTED, WOULD NOT VIOLATE ANY OF THE RIGHTS GUARANTEED BY THE FIFTH AMENDMENT

It has been shown that the commerce power and the war powers separately provide sufficient sources of power to enable Congress to enact the proposed legislation. But since the exercise of the powers of Congress is subject to the limitations imposed by the fifth amendment, the proposed legislation must be shown to be consistent with the due process requirements of that amendment. For the constitutionality of the bill depends upon two different questions: The first being the power of Congress to enact any legislation at all to regulate the production of petroleum, which power has been shown to exist; the second being the extent to and the manner in which such power can constitutionally be exercised, for no matter what power has been delegated to Congress by the Constitution, it cannot be exercised so as to deprive anyone of property without due process of law.

In *Nebbia* v. *New York*, 291 U. S. 502, 525, the Supreme Court defined the scope of the fifth amendment as a limitation upon the exercise of the powers of the Federal Government in the following language:

> "The fifth amendment, in the field of Federal activity, and the fourteenth as respects State action, do not prohibit governmental regulation for the public welfare. They merely condition the exertion of the admitted power, by securing that the end shall be accomplished by methods consistent with due process. And the guaranty of due process, as has often been held, demands only that the law shall not be unreasonable, arbitrary or capricious, and that the means selected shall have a real and substantial relation to the object sought to be attained."

The end sought to be attained by the proposed legislation is to conserve the Nation's petroleum reserves by preventing the employment of wasteful practices in their exploitation. The means selected to accomplish this objective are similar to those employed by the States in analogous petroleum conservation legislation enacted under the State police power. In a number of cases the Supreme Court has sustained the validity of such State legislation against the argument that, by interfering with the rule of capture, such legislation involved a taking of property in violation of the due-process clause of the fourteenth amendment. *Ohio Oil Co.* v. *Indiana*, 177 U. S. 190; *Bandini Co.* v. *Superior Court*, 284 U. S. 8; *Walls* v. *Midland Carbon Co.*, 254 U. S. 300; *Champlin Refining Co.* v. *Corporation Commission*, 286 U. S. 210. These cases are authority for the due-process sufficiency of the proposed legislation, since the Supereme Court has often held that the due-process clause of the fifth amendment and that of the fourteenth differ, in matters of this kind, only in that the fifth pertains to Federal legislation whereas the fourteenth pertains to State action. As the Court stated in *Hamilton* v. *Kentucky Distilleries Co.*, 251 U. S. 146, 157:

> "* * * If the nature and conditions of a restriction upon the use or disposition of property is such that a State could, under the police power, impose it consistently with the fourteenth amendment without making compensation, then the United States may for a permitted purpose impose a like restriction consistently with the fifth amendment without making compensation."

Therefore, the language of the Supreme Court in *Champlin Refining Co.* v. *Corporation Commission*, upholding a statute of Oklahoma prohibiting the production of petroleum in such manner or under such conditions as constitute waste against the objection that it was repugnant to the fourteenth amendment, is directly applicable here (286 U. S. 210, 233–234):

> "* * * if plaintiff should take all the flow of its wells, there would inevitably result great physical waste, even if its entire production should be

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[8] Dean Pound of the Harvard Law School and Dean Bates of the University of Michigan Law School recognized authorities in the field of constitutional law, have both expressed the opinion that legislation such as is here proposed would be a valid exercise of the war powers. See Petroleum Investigation, Hearings on H. Res. 441, 73d Cong., 2d sess. (1934) 1557–1574. Dean Bates stated that: "The war powers of the President and Congress undoubtedly may be exercised to conserve oil and gas, so important not only for the supporting industries of the country but for the prosecution of war upon land, sea, and air." [*Ibid.*, at 1564.]

And Dean Pound said: "* * * if there is one thing the books do insist upon, it is that petroleum is the very vitals of preparation. I say that if the Pacific roads could be built by the Federal Government under the war power, I don't see why petroleum couldn't be conserved on the same basis." [*Ibid.*, at 1574.]

> devoted to useful purposes. The improvident use of natural gas pressure inevitably attending such operations would cause great diminution in the quantity of crude oil ultimately to be recovered from the pool. Other lessees and owners of land above the pool would be compelled, for self-protection against plaintiff's taking, also to draw from the common source and so to add to the wasteful use of lifting pressure. And because of the lack, especially on the part of the nonintegrated operators, of means of transportation or appropriate storage and of market demand, the contest would, as is made plain by the evidence and findings, result in surface waste of large quantities of crude oil.
>
> "* * * Every person has the right to drill wells on his own land and take from the pools below all the gas and oil that he may be able to reduce to possession, including that coming from land belonging to others; but the right to take and thus ro acquire ownership is subject to the reasonable exertion of the power of the State to prevent unnecessary loss, destruction or waste. And that power extends to the taker's unreasonable and wasteful use of natural gas pressure available for lifting the oil to the surface and the unreasonable and wasteful depletion of a common supply of gas and oil to the injury of others entitled to resort to and take from the same pool."

IV. IF THE PROPOSED "PETROLEUM CONSERVATION ACT OF 1939" WERE ENACTED, THE AUTHORIZATION BY THE CONGRESS OF THE COMMISSIONER OF PETROLEUM CONSERVATION TO MAKE RULES AND REGULATIONS THEREUNDER WOULD NOT BE AN UNCONSTITUTIONAL DELEGATION OF LEGISLATIVE POWERS

The doctrine of delegation of powers, based upon the fundamental tripartite division of the Federal Government, prevents Congress from abandoning its constitutional power to the other two branches of the Government. Accordingly, when the necessities of practical administration require Congress to avail itself of executive or administrative agencies, it must determine the policies which such agencies are to apply to particular factual situations. It is well established that in order to secure the effectuation of legislative policies the Congress may vest in the executive branch of the Government power to issue regulations and make determinations of fact. *Currin* v. *Wallace*, 306 U. S. 1, 15; *United States* v. *Grimaud*, 220 U. S. 506. A statutory delegation of such authority is proper if the statute formulates with sufficient clarity the policies of Congress to be effectuated and establishes standards which will serve to guide and confine the exercise of the powers granted. *Buttfield* v. *Stranahan*, 192 U. S. 470; *Union Bridge Co.* v. *United States*, 204 U. S. 364; *Hampton and Co.* v. *United States*, 276 U. S. 394; *United States* v. *Rock Royal Cooperative, Inc.*, 307 U. S. 533. As Mr. Chief Justice Hughes said in *Panama Refining Co.* v. *Ryan*, 293 U. S. 388, 421:

> "The Constitution provides that 'All legislative powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and House of Representatives' (art. I, sec. 1). And the Congress is empowered "To make all laws which shall be necessary and proper for carrying into execution' its general powers (art. I, sec. 8), par. 18. The Congress manifestly is not permitted to abdicate, or to transfer to others, the essential legislative functions with which it is thus vested. Undoubtedly legislation must often be adapted to complex conditions involving a host of details with which the national legislature cannot deal directly. The Constitution has never been regarded as denying to the Congress the necessary resources of flexibility and practicality, which will enable it to perform its function in laying down policies and establishing standards, while leaving to selected instrumentalities the making of subordinate rules within prescribed limits and the determination of facts to which the policy as declared by the legislature is to apply. Without capacity to give authorizations of that sort we should have the anomaly of a legislative power which in many circumstances calling for its exertion would be but a futility."

Section 2 of the proposed "Petroleum Conservation Act of 1939" clearly defines the legislative policy and identifies the subject with which the measure deals. The bill is concerned with wasteful methods of production and storage of petroleum; it is designed to prevent the use of such methods in the interests of national defense, conservation, and the freedom of interestate commerce. The policy embodied in the bill is made more explicit by the definition in subdivision (b) of section 5 of "physical waste of crude oil" and "waste of reservoir energy."

In order to effectuate the purpose of the measure, the Commissioner of the Office of Petroleum Conservation is empowered to determine whether or not the methods employed in the oil fields of the United States are effective in preventing "the avoidable waste of crude oil and the avoidable waste of reservoir energy available for the recovery of crude oil." Standards for the guidance of the Commissioner are contained in subdivisions (b) and (c) of section 5 of the bill. Subdivision (b) defines "physical waste of crude oil," "waste of reservoir energy," and "reservoir energy." In subdivision (c) are enumerated 10 factors of which the Commissioner must take account in making a determination.

Section 6, subdivision (b) requires the Commissioner, after investigation of a field to issue regulations which "designate and define with particularity" methods and practices found to be wasteful. Standards for the exercise of this rule-making power are provided in the same section of the bill and there are listed 11 "factors of waste" which the Commissioner must consider and for which he must make provision in the regulations issued.

This bill is clearly distinguishable from the statute involved in *Panama Refining Co.* v. *Ryan*, 293 U. S. 388, and *Schechter Poultry Co.* v. *United States*, 295 U. S. 495, where unconstitutional delegations of legislative power were found. By contrast to the specific statement of purpose and policy contained in the proposed "Petroleum Conservation Act of 1939," the National Industrial Recovery Act, with which the *Panama* and *Schechter cases* were concerned, declared an extremely vague policy aimed at general rehabilitation of industry. Nor did that statute confine the executive's discretion with any restrictions comparable to the minimum requirements for the Commissioner's orders set forth in the present bill. In the *Panama case* the President's regulatory power was completely unchecked, and in the *Schechter case* the only requirement was that he act "to effectuate the policy of the Act." The *Schechter case* is further distinguishable in that, there, the President's authority covered substantially all industry, whereas in this bill the Commissioner's authority is confined to specific regulations of a specific activity. Further, the proposed legislation requires that the promulgation of rules and regulations be based upon administrative findings, to be preceded by adequate notice and opportunity for public hearings, while in the National Industrial Recovery Act no appropriate administrative procedure was prescribed. *Cf. United States* v. *Rock Royal Cooperative, Inc.*, 307 U. S. 533, 576.

If this measure is enacted, it will not present a case in which the Congress "has declared no policy, has established no standard, has laid down no rule." *Panama Refining Company* v. *Ryan* (293 U. S. 388, 430). The bill neitherl acks an "adequate definition of the subject" to which the administrative determinations and regulations are to be addressed (*Cf. Schechter Corp.* v. *United States*, 295 U. S. 495, 531) nor vests in the Commissioner "an unfettered discretion to make whatever laws he thinks may be needed or advisable for the rehabilitation and expansion of the industry." (295 U. S. 495, 537, 538). In H. R. 7372 both the legislative subject and the legislative policy clearly appear. In the light of the many factors enumerated in the bill, the Commissioner must ascertain whether a given practice involves physical waste or waste of reservoir energy as those terms are defined in the bill. The bill contemplates administrative action which effectuates the legislative policy and which is guided by the criteria prescribed.

There are many cases sustaining grants to administrative officials of power to execute a statutory policy in compliance with general standards by action in particular cases which, on their facts, have been found to fall within the ambit of the legislation.

In *Union Bridge Company* v. *United States* (204 U. S. 364), the court found no unconstitutional delegation of power in a statute providing:

> "That whenever the Secretary of War shall have good reason to believe that any railroad or other bridge now constructed, or which may hereafter be constructed, over any of the navigable waterways of the United States is an unreasonable obstruction to the free navigation of such waters on account of insufficient height, width of span, or otherwise, or where there is difficulty in passing the draw opening or the draw span of such bridge by rafts, steamboats, or other watercraft, it shall be the duty of the said Secretary, first giving the parties reasonable opportunity to be heard, to give notice to the persons or corporations owning or controlling such bridge so to alter the same as to render navigation through or under it reasonably free, easy, and unobstructed; and in giving such notice he shall specify the changes recommended by the Chief of Engineers that are required to be made, and shall prescribe in each case a reasonable time in which to make them. If at the end of such time the alteration has not been made, the Secretary of War shall forthwith notify the United States district attorney for the district in which such bridge is situated, to the end that the criminal proceedings hereinafter mentioned may be taken." (30 Stat. 1153.)

Mr. Justice Harlan said, in part:

> "As appropriate to the object to be accomplished, as a means to an end within the power of the National Government, Congress, in execution of a declared policy, committed to the Secretary of War the duty of ascertaining all the facts essential in any inquiry whether particular bridges, over the waterways of the United States, were unreasonable obstructions to free navigation. Beyond question, if it had so elected, Congress, in some effective mode and without previous investigation through executive officers, could have determined for itself, primarily, the fact whether the bridge here in question was an unreasonable obstruction to navigation, and, if it was found to be of that character, could by direct legislation have required the defendant to make such alterations of its bridge as were requisite for the protection of navigation and commerce over the waterway in question. But investigations by Congress as to each particular bridge alleged to constitute an unreasonable obstruction to free navigation and direct legislation covering each case, separately, would be impracticable in view of the vast and varied interests which require national legislation from time to time. By the statute in question Congress declared in effect that navigation should be free from unreasonable obstructions arising from bridges of insufficient height, width of span or other defects. It stopped, however, with this declaration of a general rule and imposed upon the Secretary of War the duty of ascertaining what particular cases came within the rule prescribed by Congress, as well as the duty of enforcing the rule in such cases. In performing that duty the Secretary of War will only execute the clearly expressed will of Congress, and will not, in any true sense, exert legislative or judicial power." (204 U. S. 364, 385, 386.) (See also *Monongahela Bridge* v. *United States*, 216 U. S. 177, 192–194 (1910).)

Promulgation by the Secretary of Agriculture of regulations requiring grazing permits was upheld in *United States* v. *Grimaud* (220 U. S. 506). The regulations were issued under the provisions of a statute authorizing the Secretary to "make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction; and any violation of the provisions of this Act or such rules and regulations shall be punished as is provided for in the Act of June fourth, eighteen hundred and eighty-eight, amending section fifty-three hundred and eighty-eight of the Revised Statutes of the United States." (30 Stat. 35.)

The criterion of "public interest" was held to be sufficiently definite to support a grant of power to the Interstate Commerce Commission to authorize acquisition by one carrier of the control of another. *New York Central Securities Company* v. *United States*, 287 U. S. 12, 24, 25. (See also *Avent* v. *United States*, 266 U. S. 127; *St. Louis and Iron Mountain Railway* v. *Taylor*, 210 U. S. 281, 287; *Radio Commission* v. *Nelson Brothers Company*, 289 U. S. 266 and the references to this case in *Panama Refining Company* v. *Ryan*, 293 U. S. at page 428, and *Currin* v. *Wallace*, 306 U. S. 1, 18.)

The provisions of the Agricultural Adjustment Act of 1938 relating to allotments of farm quotas for tobacco were recently upheld in *Mulford* v. *Smith*, 307 U. S. 38. The act provides, in part:

> "(a) The national marketing quota for tobacco established pursuant to the provisions of section 1312, less the amount to be allotted under subsection (c) of this section, shall be apportioned by the Secretary among the several States on the basis of the total production of tobacco in each State during the five calendar years immediately preceding the calendar year in which the quota is proclaimed (plus, in applicable years, the normal production on the acreage diverted under previous agricultural adjustment and conservation programs), with such adjustments as are determined to be necessary to make correction for abnormal conditions of production, for small farms, and for trends in production, giving due consideration to seed bed and other plant diseases during such five-year period * * *.
>
> "(b) The Secretary shall provide, through the local committees, for the allotment of the marketing quota for any State among the farms on which tobacco is produced, on the basis of the following: Past marketing of tobacco, making due allowance for drought, flood, hail, other abnormal weather conditions, plant bed, and other diseases; land, labor, and equipment available for the production of tobacco; crop-rotation practices; and the soil and other physical factors affecting the production of tobacco * * *.

> "(c) The Secretary shall provide, through local committees, for the allotment of not in excess of 5 per centum of the national marketing quota (1) to farms in any State whether it has a State quota or not on which for the first time in five years tobacco is produced to be marketed in the year for which the quota is effective and (2) for further increase of allotments to small farms pursuant to the proviso in subsection (b) of this section on the basis of the following: Land, labor, and equipment available for the production of tobacco; crop-rotation practices; and the soil and other physical factors affecting the production of tobacco." (7 U. S. C., Supp. IV, sec. 1313.)

The Court said:

> "What has been said in summarizing the provisions of the Act sufficiently discloses that definite standards are laid down for the government of the Secretary, first, in fixing the quota and, second, in its allotment amongst States and farms. He is directed to adjust the allotments so as to allow for specified factors which have abnormally affected the production of the State or the farm in question in the test years. Certainly fairness requires that some such adjustment shall be made. The Congress has indicated in detail the considerations which are to be held in view in making these adjustments, and, in order to protect against arbitrary action, has afforded both administrative and judicial review to correct errors. This is not to confer unrestrained arbitrary power on an executive officer. In this aspect the act is valid within the decisions of this Court respecting delegation to administrative officers." (307 U. S. 38, 48–49.)

The Tobacco Inspection Act (7 U. S. C., Supp. IV, sec. 511 *et seq.*) was found in *Currin* v. *Wallace*, 306 U. S. 1, 16–18, to involve no unconstitutional delegation of power, and in *United States* v. *Rock Royal Cooperative, Inc.*, 307 U. S. 533, 574–577, the court sustained a grant of power to the Secretary of Agriculture with respect to the regulation of the milk industry under the provisions of the Agricultural Marketing Agreement Act of 1937 (see 7 U. S. C., Supp. IV, secs. 601, 602, 608, 608c, 608e).

In the most recent consideration by the Supreme Court of the United States of the problem of delegation of power, the Court said:

> "From the earliest days the Congress has been compelled to leave to the administrative officers of the Government authority to determine facts which were to put legislation into effect and the details of regulations which would implement the more general enactments. It is well settled, therefore, that it is no argument against the constitutionality of an act to say that it delegates broad powers to executives to determine the details of any legislative scheme. This necessary authority has never been denied. In dealing with legislation involving questions of economic adjustment, each enactment must be considered to determine whether it states the purpose which the Congress seeks to accomplish and the standards by which that purpose is to be worked out with sufficient exactness to enable those affected to understand these limits. Within these tests the Congress needs specify only so far as is reasonably practicable." *United States* v. *Rock Royal Cooperative, Inc.*, 307 U. S. 533, 574.

The standards prescribed in H. R. 7372 for the exercise of the Commissioner's power are no less sharply defined than are those comprised in the statutes considered and sustained in the cases listed above.

In the definitions and criteria enumerated in the bill are reflected the complexity of the problems which the Commissioner will encounter and the factors actually considered by experts in connection with production of petroleum. Uren, Petroleum Production Engineering (1929), ch. 1: "Conservation of Petroleum and of Natural Gas," Paper No. 12, Third World Power Conference (1936); "Fluid-Energy Relations in Production of Petroleum and Natural Gas," R. A. Cattell and H. C. Fowler, Bureau of Mines Mineral Yearbook, 1934, pp. 707–721; Oil Fields to Which H. R. 7372 Would Apply. (Memorandum prepared by the Petroleum and Natural Gas Division, U. S. Bureau of Mines, 1939.)

A review of the authorities dealing with the question of the delegation of power compels the conclusion that the bill "states the purpose which the Congress seeks to accomplish and the standards by which that purpose is to be worked out with sufficient exactness to enable those affected to understand these limits," and that they have been made as specific "as is reasonably practical" *United States* v. *Rock Royal Cooperative, Inc.*, 307 U. S. 533.

CONCLUSION

The proposed legislation, in my opinion, is clearly within the power of Congress to enact.

Respectfully submitted.

NATHAN R. MARGOLD,
Solicitor, Department of the Interior.

APRIL 5, 1940.

(Between March 4, 1940, and April 1, 1940, some important correspondence pertaining to these hearings passed between the President of the United States and the chairman of this committee. That correspondence is inserted herewith:)

THE WHITE HOUSE,
Washington, March 4, 1940.

Hon. WILLIAM P. COLE, Jr.,
Chairman, Petroleum Subcommittee,
Committee on Interstate and Foreign Commerce,
House of Representatives.

MY DEAR MR. COLE: On July 22, 1939, I wrote to Chairman Lea, of the Interstate and Foreign Commerce Committee, inviting attention to the desirability of the early enactment of legislation to provide a coordinated national policy in oil conservation and requesting the introduction of the petroleum conservation bill, H. R. 7372. Chairman Lea appointed your subcommittee to consider this bill and to study developments in the petroleum industry since your previous inquiry in 1934.

You will recall the conference last summer at which the need for such legislation and the provisions of the proposed measure were discussed at length and that I endorsed fully the objectives of the bill which I asked you to introduce. Subsequent events have sharpened my conception of the tremendous importance of petroleum to the present and future well-being of our country and, upon returning from my recent trip, Iwas pleased to learn that your subcommittee has practically completed the difficult task of receiving and studying the testimony presented at your several hearings.

I am hopeful that your subcommittee will frame suitable legislation to assure the efficient production of oil and gas from our petroleum reserves, which will give due recognition to the views expressed at your hearings by the officials of the oil-producing States and representatives of the oil industry. The proper coordination of Federal and State responsibilities in oil conservation, without impeding the oil industry in the continued improvement of its technological processes, and keeping in mind the welfare of those employed in the oil industry and the needs of consumers, is a problem which requires your best thought and effort. I am confident that you can segregate the essential considerations of this problem and provide an adequate solution.

Sincerely yours,

FRANKLIN D. ROOSEVELT.

MARCH 7, 1940.

Hon. FRANKLIN D. ROOSEVELT,
The White House, Washington, D. C.

DEAR MR. PRESIDENT: Immediately upon receipt of your letter of March 4 with reference to H. R. 7372 and the investigation of the petroleum industry being conducted by the subcommittee of which I am chairman, I called the subcommittee together for the purpose of considering the suggestions and observations presented by you therein.

It is correct that our subcommittee has practically completed the taking of testimony but it is doubtful if our hearings will be finally closed until the last week in this month.

The committee notes, with special interest, the last paragraph of your letter, reading in part as follows:

> giving due recognition to the views expressed at your hearings by the officials of the oil-producing States and the oil industry.

and in so doing, the committee desire to know, in view of this statement, whether you were cognizant of the fact that the Governors of nine of the oil-producing States appeared before us in person and all the other States, with the exception of

Illinois either through representatives or by letter, protesting vigorously against the passage of the proposed legislation and further cognizant of the fact that the regulatory agencies of all such States did likewise. In addition to the foregoing expression of opposition, the industry, speaking through representatives of the American Petroleum Institute, the Independent Petroleum Association and the Mid-Continent Oil and Gas Association, likewise voiced lengthy and strong objection to the passage of any such legislation. If your familiarity with the proceedings before our committee is such that the foregoing was a matter of knowledge to you before your letter of March 4 was prepared, then the committee is wondering whether your reference to such attitude with the request that we give "due recognition" thereto, suggests any different approach to the problem before us, from a legislative standpoint, than that embodied in H. R. 7372, introduced by me last July at your request.

The committee is indebted to you for the interest you manifest in this tedious and important problem delegated to us by Congress, and I am sure you can appreciate the reasons prompting this inquiry from the committee to you.

Awaiting your further suggestions, I am,

Very sincerely yours,

——— ———, *Chairman.*

THE WHITE HOUSE,
Washington, March 26, 1940.

HON. WILLIAM P. COLE, Jr.,
Chairman, Petroleum Subcommittee, Committee on Interstate and Foreign Commerce, House of Representatives.

MY DEAR MR. COLE: I have received your letter of March 7, 1940.

In answer to the first question raised by your committee, I am glad to tell you that, when I wrote you recently, I was aware of the statements presented to your committee by officials of oil-producing States and representatives of oil-trade associations in opposition to the bill, H. R. 7372. I had the pleasure of talking personally with some of these gentlemen and learned directly from them their attitude toward this measure.

My letter of March 4, 1940, was written with the thought that the members of your committee, most of whom have been in touch with the problems of oil and gas conservation since 1933, on the basis of that experience could frame suitable legislation, with H. R. 7372 as a guide, which would go a long way toward meeting the essential objections of those who opposed that measure but which would adequately prevent the wasteful production of oil and gas and assure permanently the conservation of our petroleum resources.

Your committee asks whether this thought suggests a different approach to the problem, from a legislative viewpoint, than that embodied in H. R. 7372. My answer would be that a modification of the enforcement procedures rather than of the objectives of H. R. 7372 is suggested.

As introduced by you at my request, H. R. 7372 provides for the establishment in the Department of the Interior of an Office of Petroleum Conservation and the transfer to that agency of the units of the Federal Government now engaged in oil conservation; and outlines the functions of that office in the assembly and dissemination of information and the conduct of research and investigations in matters relating to petroleum and petroleum conservation, including the reporting to specified State authorities of oil-production practices found to be wasteful. These provisions parallel closely the corresponding provisions of the measure which your committee drafted and recommended in 1935 and it is my understanding that no material objection has been offered to them.

As I understand the controversy over H. R. 7372, there is little objection to the Federal Government prescribing, in order to conserve our petroleum resources, standards of production to which oil producers should conform as a condition to the shipment of their oil in interstate commerce. The principal objection to the proposed legislation seems to be that it provides for Federal enforcement of these standards in all fields regardless of the adequacy of State enforcement of such standards.

This being the case, I should think it would be possible to agree that the standards of production necessary to qualify oil for shipment in interstate commerce should be prescribed by the Federal Government but that these standards should be enforced by the Federal Government only if an authorized Federal agency finds that the States have failed to enact laws requiring conformity with federally prescribed standards or have failed persistently to enforce compliance with such standards when required by State laws. Insofar as the States fail to enact or enforce oil and gas conservation laws requiring conformity with the standards prescribed by Federal law I should think that oil producers should be given the right to qualify their oil for shipment in interstate commerce by entering into voluntary agreements, subject to the approval of the authorized Federal agency, to conform with such standards. Legislation along these lines would in effect be an extension of the principles of the act of February 22, 1935, generally known as the Connally law.

I hope that this approach will be helpful to your committee and that it will aid you in framing prompty suitable and adequate legislation which will receive the support of your committee and of the Congress.

Sincerely yours,

Franklin D. Roosevelt.

Mr. Cole. At a meeting of the committee on March 27, 1940, it was decided to close the hearings as to H. R. 7372. As to other subjects which the committee has been requested to investigate and study, all of which are covered by the authorization under which the committee is functioning, a decision at a later date will be made.

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